Health Benefits of Herbs and Spices

How new findings will disrupt global spice industry?

Bharat B. Aggarwal, Ph.D.

Inflammation Research Center, San Diego, California; USA

Retired Professor & Chief, Cytokine Research, Department of Experimental Therapeutics, The University of Texas, M.D. Anderson Cancer Center, Houston, Texas

Former Senior Scientist, Genentech Inc., South San Francisco, California

PDF, University of California, San Francisco; Ph.D., University of California, Berkeley

Hosted by

Gerhard Weber & Anders Mattsson

ESA (European Spice Association) esa-spices.org

May 31st- June 1st, 2017, Annual Meeting General Assembly, Bordeaux, France.

Talk: Wednesday, May 31st, 2017: 4:00 to 5:00 PM

Goa: Land of Vasco de Gama

2nd International Conference On
"Nutraceuticals and Chronic Diseases-*INCD 2017*
And Nutraceutical Exhibition"
September 1- 3, 2017

Bogmallo Beach Resort, Goa, India



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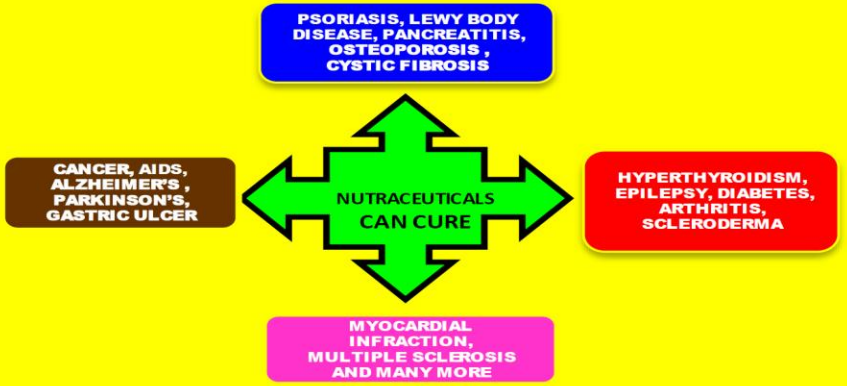
Theme

Extensive research over last half a century has revealed that most chronic diseases are caused by the dysregulation of multiple genes. However, most of the drugs designed by man (pharmaceutical companies) are highly specific and high affinity chemicals that target single gene. Thus such drugs are not so effective and exhibit side effects when taken for long period of times. In contrast, most drugs designed by "mother nature" are multi-targeted, highly effective over long-term and exhibit minimal side effects. Until very recently, almost 80% of all drugs had their roots in natural products that are also some time referred to as "Nutraceuticals". The history of these nutraceuticals goes back to thousands of years as indicated by "Ayurveda" (science of long life), "Siddha", "Homeopathy", and other ancient branches of disease treatment. The current conference is designed to explore the scientific basis for the "role of nutraceuticals in chronic diseases". Nutraceuticals derived from spices, other dietary sources, and medicinal plants will be included. Chronic diseases such as diabetes, obesity, cancer, mental diseases, arthritis, cardiovascular, pulmonary, and infectious diseases will be covered. Topic such as changes in epigenetics, biofilms, microbiome, omics by nutraceuticals will also be covered. Scientists who are totally devoted to this topic are invited from around the world.



REGISTRATION DETAILS

http://www.isncd.com

Cochin: The Land of Spices

First International Conference On

Nutraceuticals and Chronic Diseases

September 9-11, 2016

Cochin, Kerala, India

Abstract Submission Deadline: 31st July 2016

Sponsored by
International Society of Translational Cancer Research
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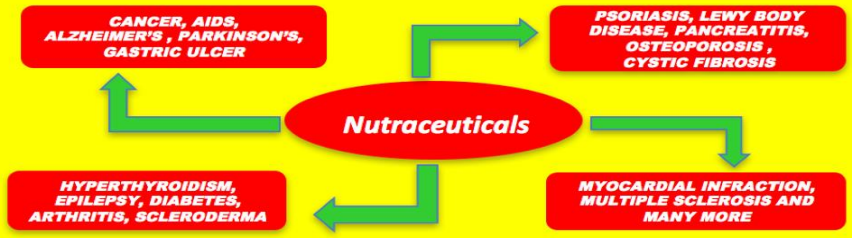
Theme

Extensive research over last half a century has revealed that most chronic diseases are caused by the dysregulation of multiple genes. However, most of the drugs designed by man (pharmaceutical companies) are highly specific and high affinity chemicals that target single gene. Thus such drugs are not so effective and exhibit side effects when taken for long period of times. In contrast, most drugs designed by "mother nature" are multi-targeted, highly effective over long-term and exhibit minimal side effects. Until very recently, almost 80% of all drugs had their roots in natural products that are also some time referred to as "Nutraceuticals". The history of these nutraceuticals goes back to thousands of years as indicated by "Ayurveda" (science of long life), "Siddha", "Homeopathy", and other ancient branches of disease treatment. The current conference is designed to explore the scientific basis for the "role of nutraceuticals in chronic diseases". Nutraceuticals derived from spices, other dietary sources, and medicinal plants will be included. Chronic diseases such as diabetes, obesity, cancer, mental diseases, arthritis, cardiovascular, pulmonary, and infectious diseases will be covered. Topic such as changes in epigenetics, biofilms, microbiome, omics by nutraceuticals will also be covered. Scientists who are totally devoted to this topic are invited from around the world.



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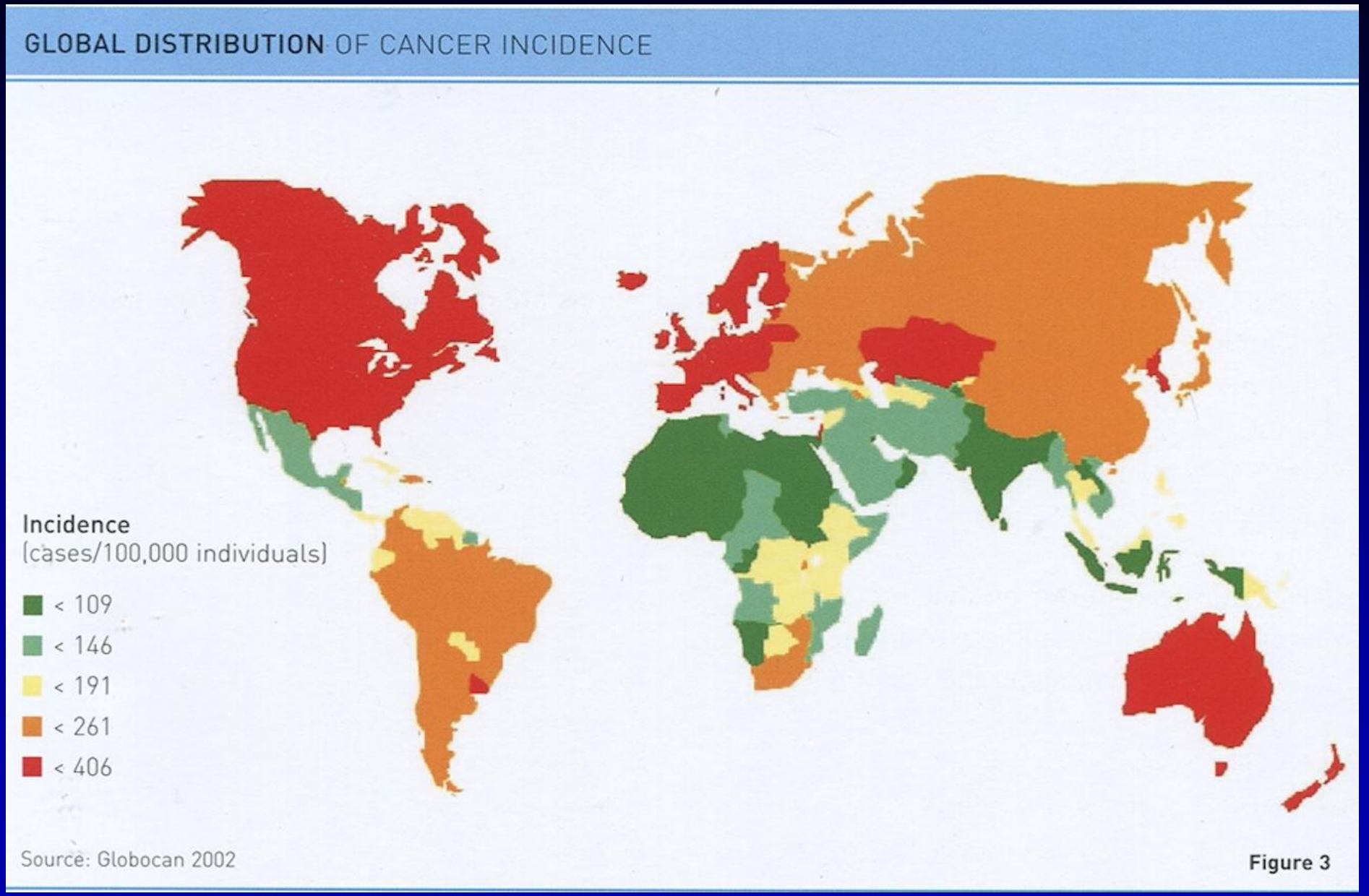
Global Cancer Incidence



Cancer incidence is less in spice consuming countries

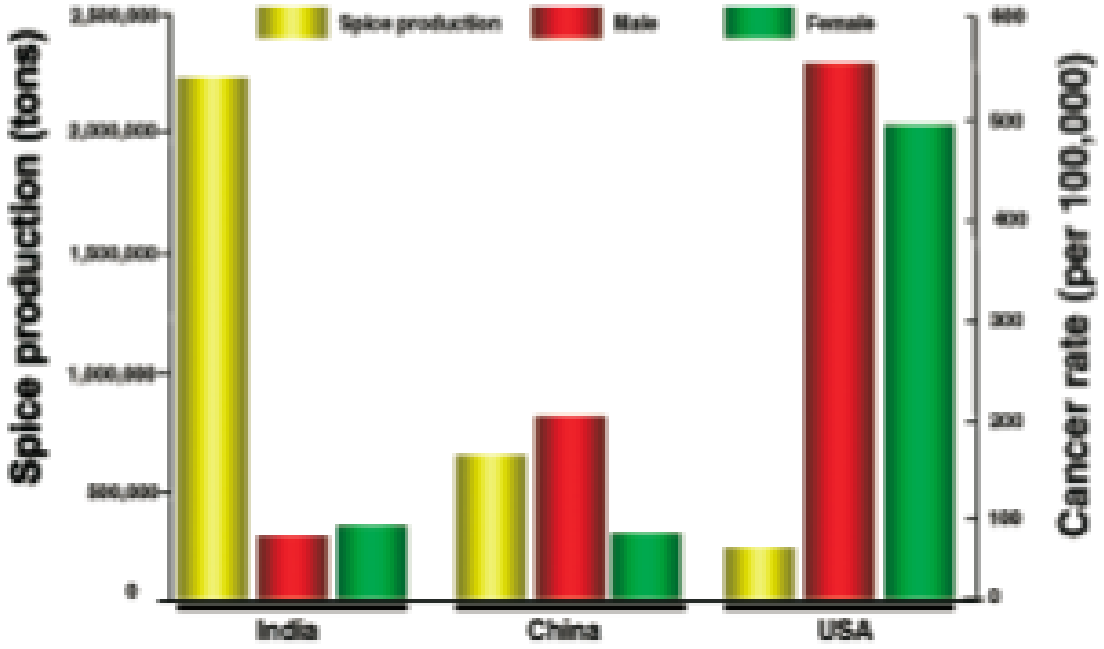


Figure 1. Relationship between production of spices and cancer incidence. Data is modified from 2000 faostat.fao.org (http://www.foodmarketexchange.com/datacenter/product/herb/herb/detail/dc_pi_hs_herb0406.htm) and cancer data from the World Health Organization GLOBOCAN 2002. A color version of the figure is available in the online journal.

Comparison of Cancer Incidence in USA and India

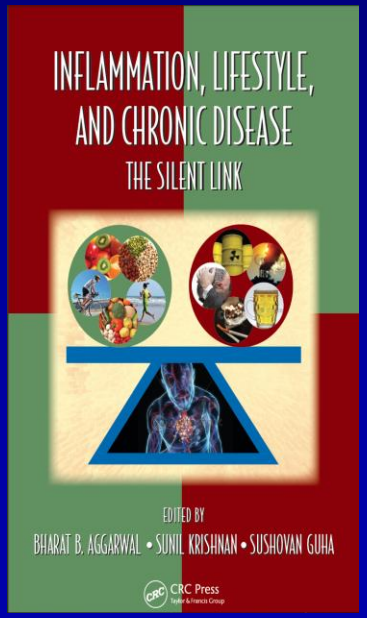
Cancer	USA		India	
	Cases	Deaths	Cases	Deaths
Breast	660	160	79	41
Prostate	690	130	20	9
Colon/Rectum	530	220	30	18
Lung	660	580	3 8	37
Head & Neck SCC	140	44	153	103
Liver	41	44	12	13
Pancreas	108	103	8	8
Stomach	81	50	33	30
Melanoma	145	27	1.8	1
Testis	21	1	3	1
Bladder	202	43	15	11
Kidney	115	44	6	4
Brain, Nervous system	65	47	19	14
Thyroid	55	5	12	3
Endometrial Cancers	163	41	132	72
Ovary	76	50	20	12
Multiple myeloma	50	40	6	5
Leukemia	100	70	19	17
Non-Hodgkin lymphoma	180	90	17	15
Hodgkin's disease	20	5	7	4

Showing cases per 1 million persons calculated on the basis of current consensus: Endometrial cancers include Cervix uteri and Corpus uteri.

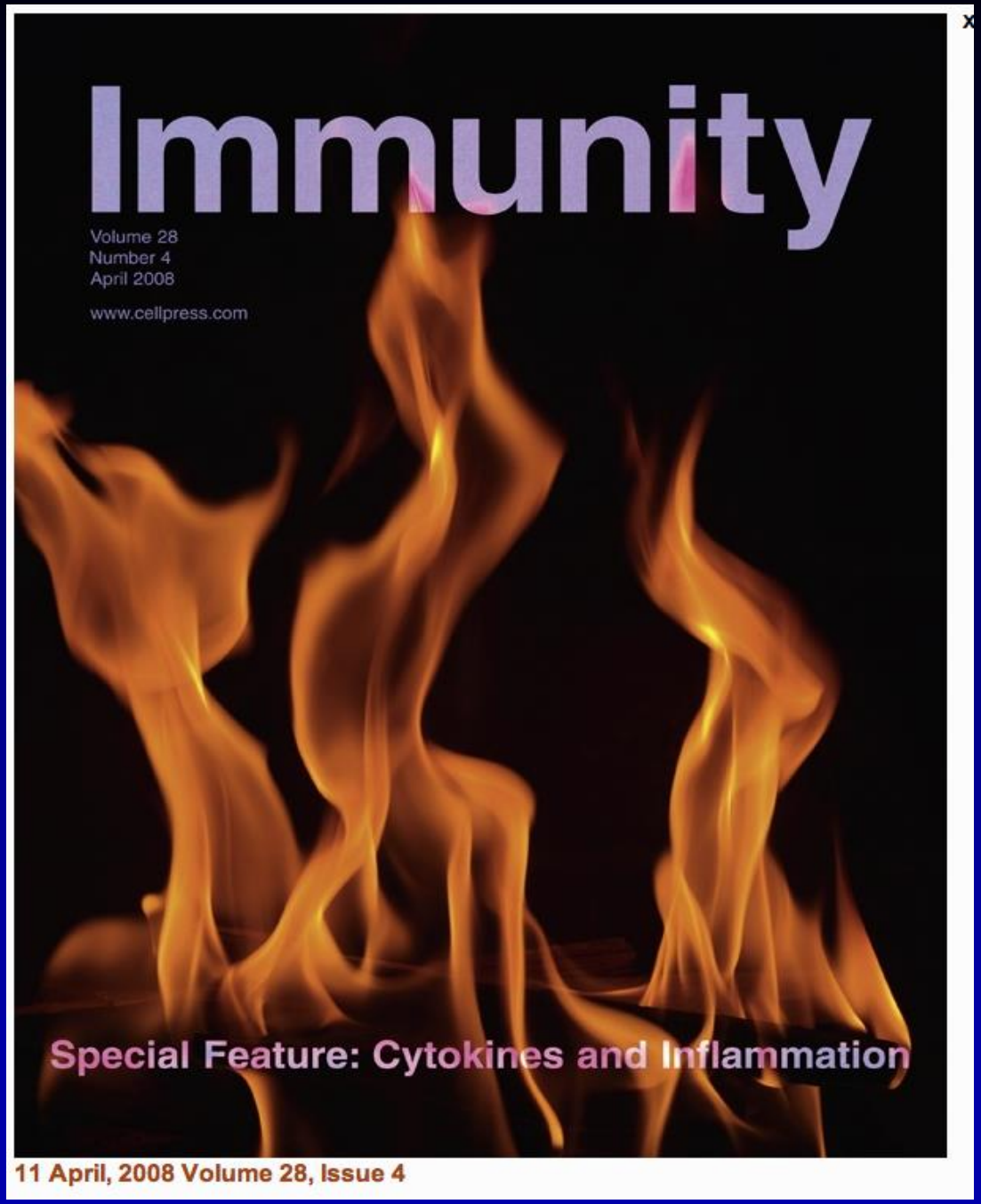
GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0. IARC Cancer Base No. 5. Lyon, IARC Press, 2001.

Inflammation, Lifestyle and Chronic Diseases: The Silent Link

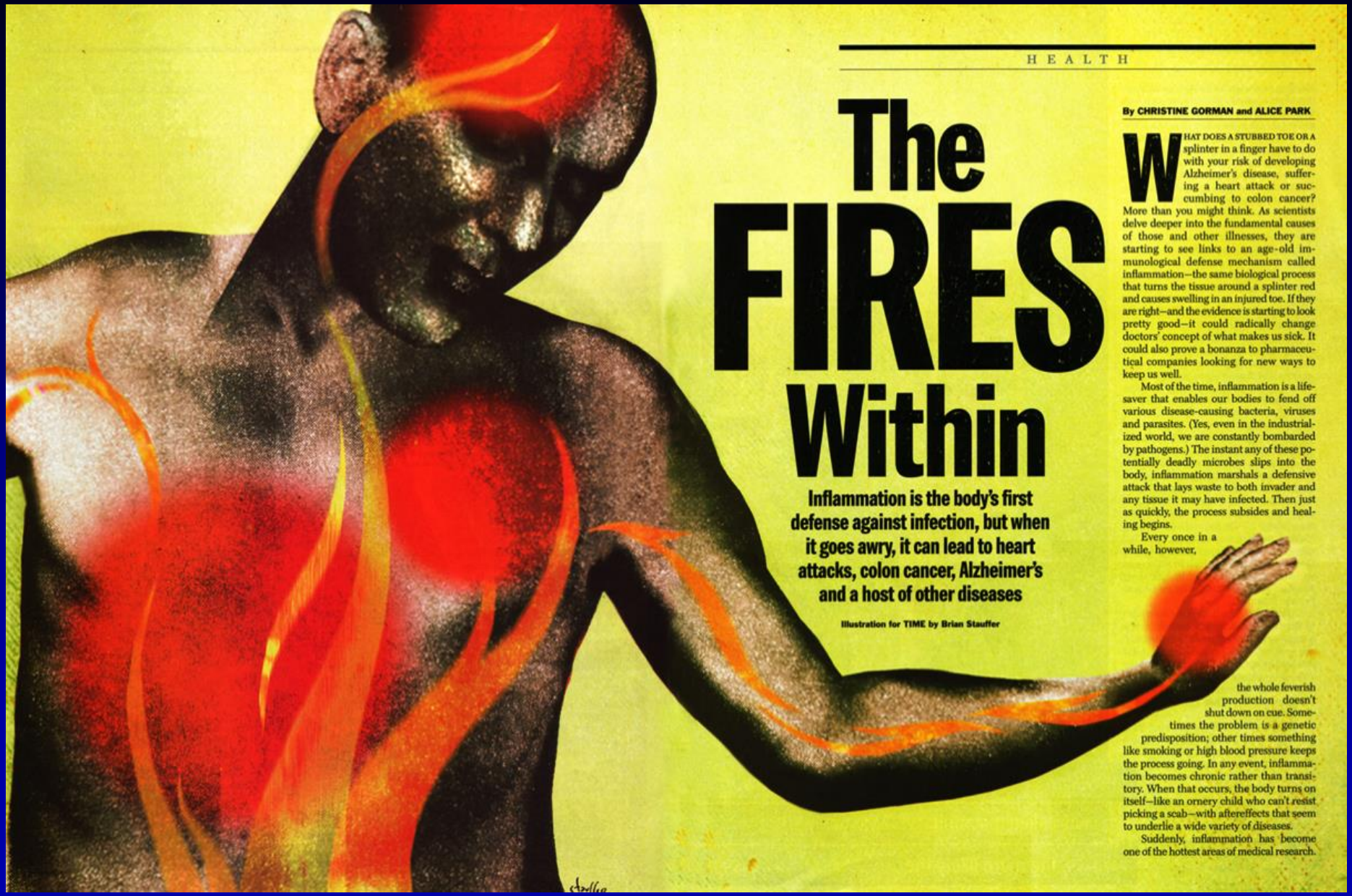
Bharat B. Aggarwal, Ph.D. (Editor),
Sunil Krishnan, M.D. (Editor),
Sushovan Guha, M.D. (Editor)



(Francis and Taylor)


Immunity
Volume 28
Number 4
April 2008
www.cellpress.com
Special Feature: Cytokines and Inflammation
11 April, 2008 Volume 28, Issue 4

TIME Feb. 23, 2004



The FIRES Within

Inflammation is the body's first defense against infection, but when it goes awry, it can lead to heart attacks, colon cancer, Alzheimer's and a host of other diseases

Illustration for TIME by Brian Stauffer

By CHRISTINE GORMAN and ALICE PARK

WHAT DOES A STUBBED TOE OR A splinter in a finger have to do with your risk of developing Alzheimer's disease, suffering a heart attack or succumbing to colon cancer? More than you might think. As scientists delve deeper into the fundamental causes of those and other illnesses, they are starting to see links to an age-old immunological defense mechanism called inflammation—the same biological process that turns the tissue around a splinter red and causes swelling in an injured toe. If they are right—and the evidence is starting to look pretty good—it could radically change doctors' concept of what makes us sick. It could also prove a bonanza to pharmaceutical companies looking for new ways to keep us well.

Most of the time, inflammation is a lifesaver that enables our bodies to fend off various disease-causing bacteria, viruses and parasites. (Yes, even in the industrialized world, we are constantly bombarded by pathogens.) The instant any of these potentially deadly microbes slips into the body, inflammation marshals a defensive attack that lays waste to both invader and any tissue it may have infected. Then just as quickly, the process subsides and healing begins.

Every once in a while, however, the whole feverish production doesn't shut down on cue. Sometimes the problem is a genetic predisposition; other times something like smoking or high blood pressure keeps the process going. In any event, inflammation becomes chronic rather than transitory. When that occurs, the body turns on itself—like an ornery child who can't resist picking a scab—with aftereffects that seem to underlie a wide variety of diseases.

Suddenly, inflammation has become one of the hottest areas of medical research.

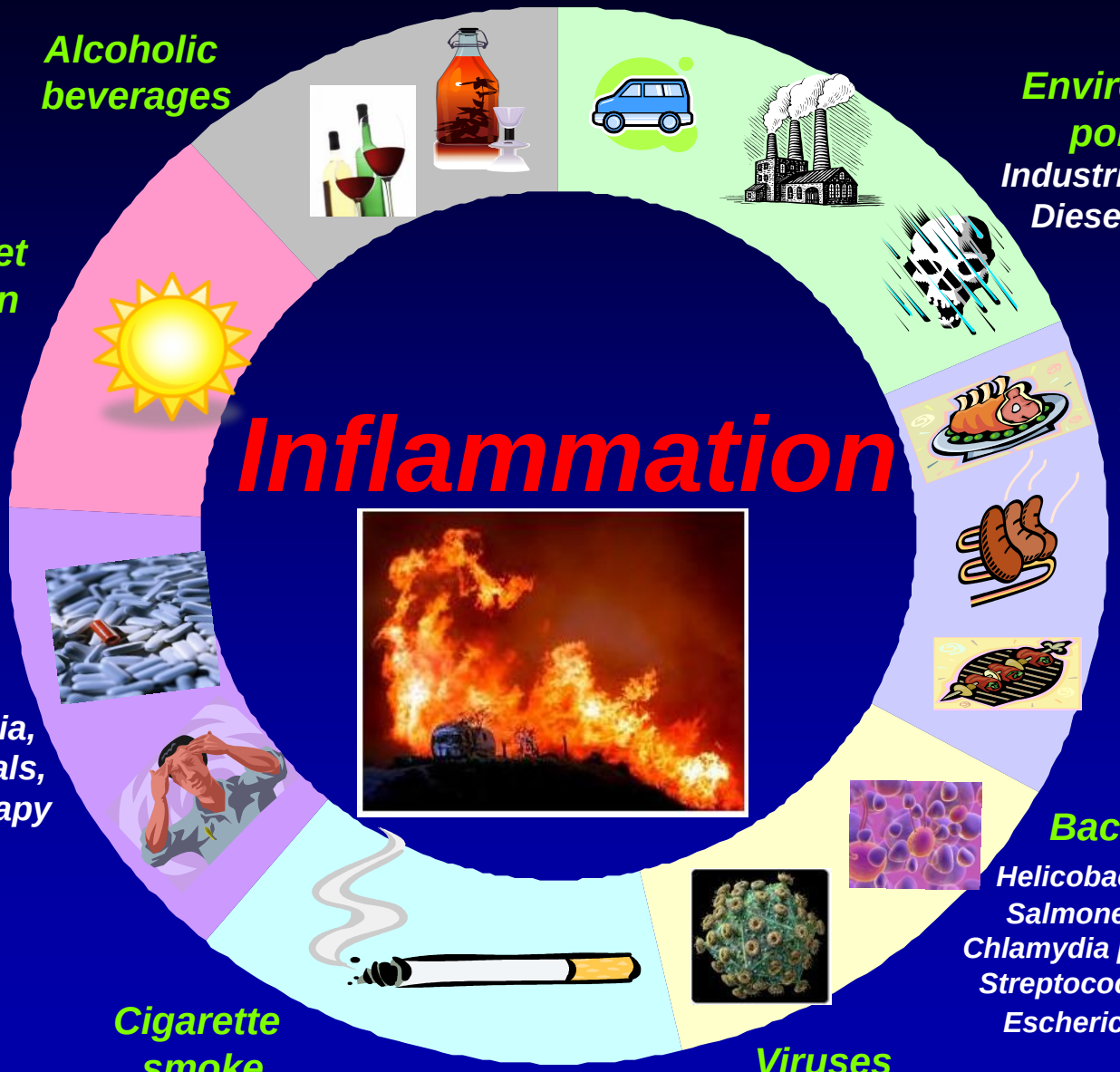
Inflammation/Flame/Fire

Controlled

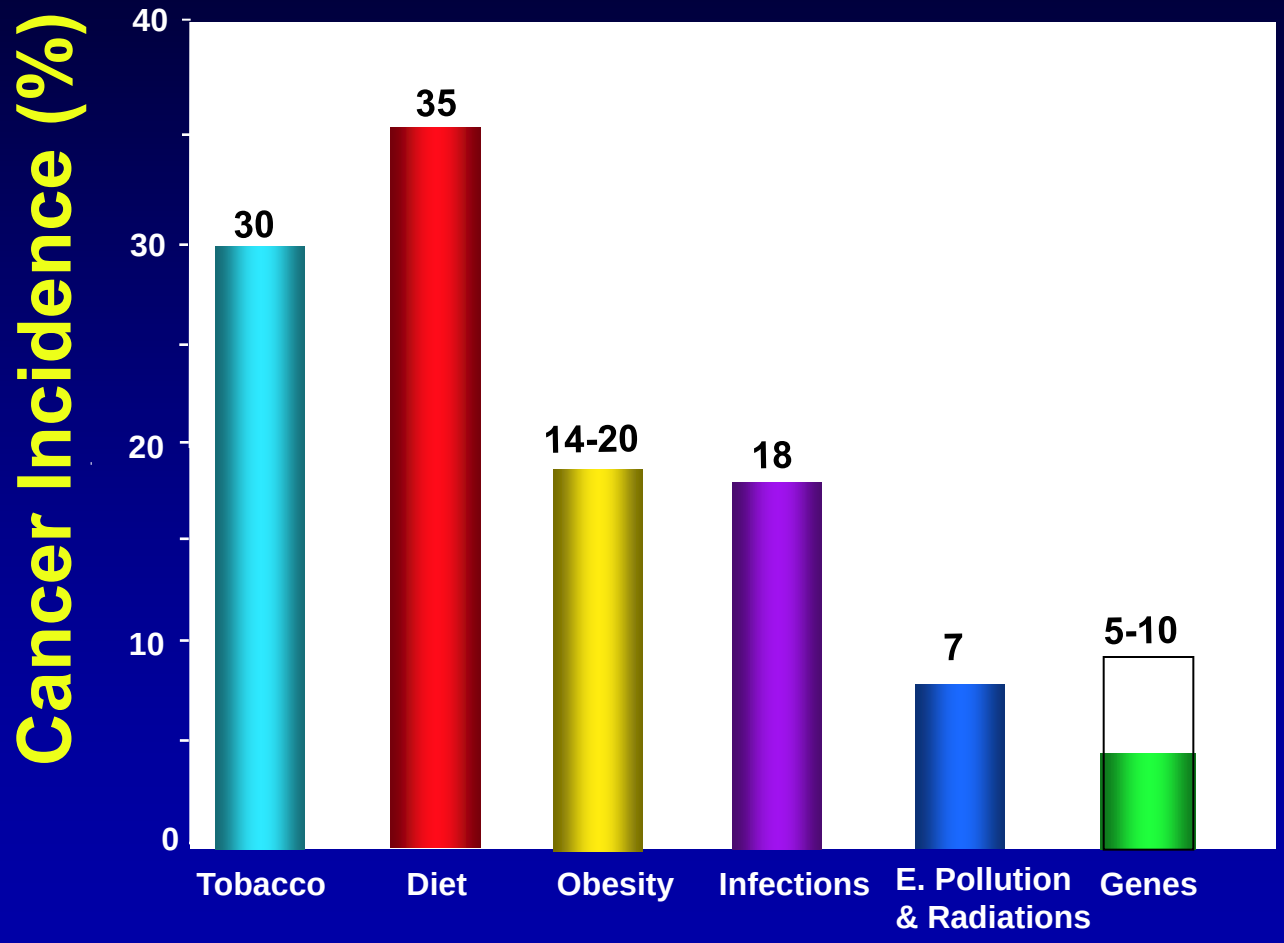
Uncontrolled

Life style Carcinogens/Risk factors

Potential Sources of Inflammation



Cancer Is a Preventable Disease That Requires Major Changes in Life Style



Anand P, Harikumar K and Aggarwal BB; Pharmaceutical Research, 2009

Inflammation and cancer

Redness, swelling, heat and pain

Rudolf Virchow (1821-1902; in 1850)

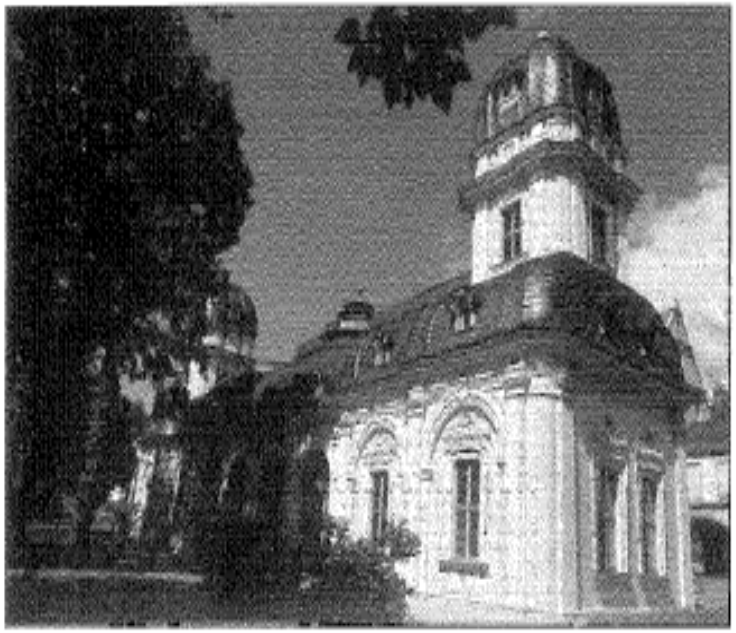


Fig. 3 - Julluspital-Pavilion, Virchow's working place in Würzburg (1849-1854).

His Pathology laboratory in Wurzburg, Germany

Linked Inflammation with atherosclerosis, rheumatoid arthritis, multiple sclerosis, cancer, asthma, Alzheimer's

From Heidland A et al, History of Nephrology, 2006

Inflammation is "itis"

Arthritis is inflammation of the joints

Bronchitis…… Bronchus

Sinusitis…… Sinus

Gastritis…… Stomach

Esophagitis…… Esophagus

Pancreatitis…… Pancreas

Meningitis……Brain

Rhinitis…… Rhina

Gingivitis…… Gum

Inflammation-mediated diseases

Adenitis
Adrenalitis
Allergic rhinitis
Appendicitis
Arachnoiditis
Arteritis
Arthritis
Blepharitis
Bronchiolitis
Bronchitis
Bursitis
Capsulitis
Carditis
Cellulitis
Cerebellitis
Cerebritis
Cervicitis
Cheilitis
Cholecystitis
Chondritis
Chorditis
Choroiditis
Colitis
Conjunctivitis
Cystitis
Dermatitis
Dermatomyositis
Diverticulitis
Duodenitis
Encephalitis
Endocarditis
Endotracheitis
Endometritis
Enteritis
Enterocolitis
Epididymitis
Epididymo-orchitis
Fibrositis
Epiglottiditis
Epiphysitis
Episcleritis
Esophagitis
Ethmoiditis
Fascitis
Fibromyositis
Folliculitis
Funiculitis
Gastritis
Gastroenteritis
Gingivitis
Glossitis
Glottitis
Glomerulonephritis
Hepatitis
Hidradenitis
Ileitis
Iritis
Iridocyclitis
JejunitisKeratitis
Keratodermatitis
Laminitis
Laryngitis
Lymphadenitis
Lymphangitis
Mastitis
Mastoiditis
Meningitis
Meningomyelitis
Myelitis
Myeloencephalitis
Myocarditis
Myositis
Myringitis
Nephritis
Neuritis
Neuroretinitis
Omphalitis
Onychitis
Oophoritis
Oophorosalpingitis
Ophthalmitis
Orchitis
Osteochondritis
Osteitis
Otitis
Optic neuritis
Osteoarthritis
Pancreatitis
Panophthalmitis
Pansinusitis
Paracolpitis
Paraglottitis
Paradenitis
Parahepatitis
Parametritis
Paranephritis
Parasalpingitis
Parodontitis
Parotitis
Periadenitis
Periangitis
Periarteritis
Periarthritis
Pericarditis
Periodontitis
Peritonitis
Pharyngitis
Phlebitis
Pleuritis
Pneumonitis
Poikilodermatomyositis
Proctitis
Pyelonephritis
Retinitis
Rhinitis
Rheumatoid arthritis
Salpingitis
Salpingo-oophoritis
Sialoadenitis
Sinusitis
Sphenoiditis
Splenitis
Spondylitis
Stomatitis
Syndesmitis
Synovitis
Tendonitis
Temporal arteritis
Tenosynovitis
Thrombophlebitis
Thyroiditis
Typlitis
Tonsillitis
Urethritis
Uveitis
Vaginitis
Valvulitis
Vulvitis
Vulvovaginitis

Inflammation as a risk factor for most cancers

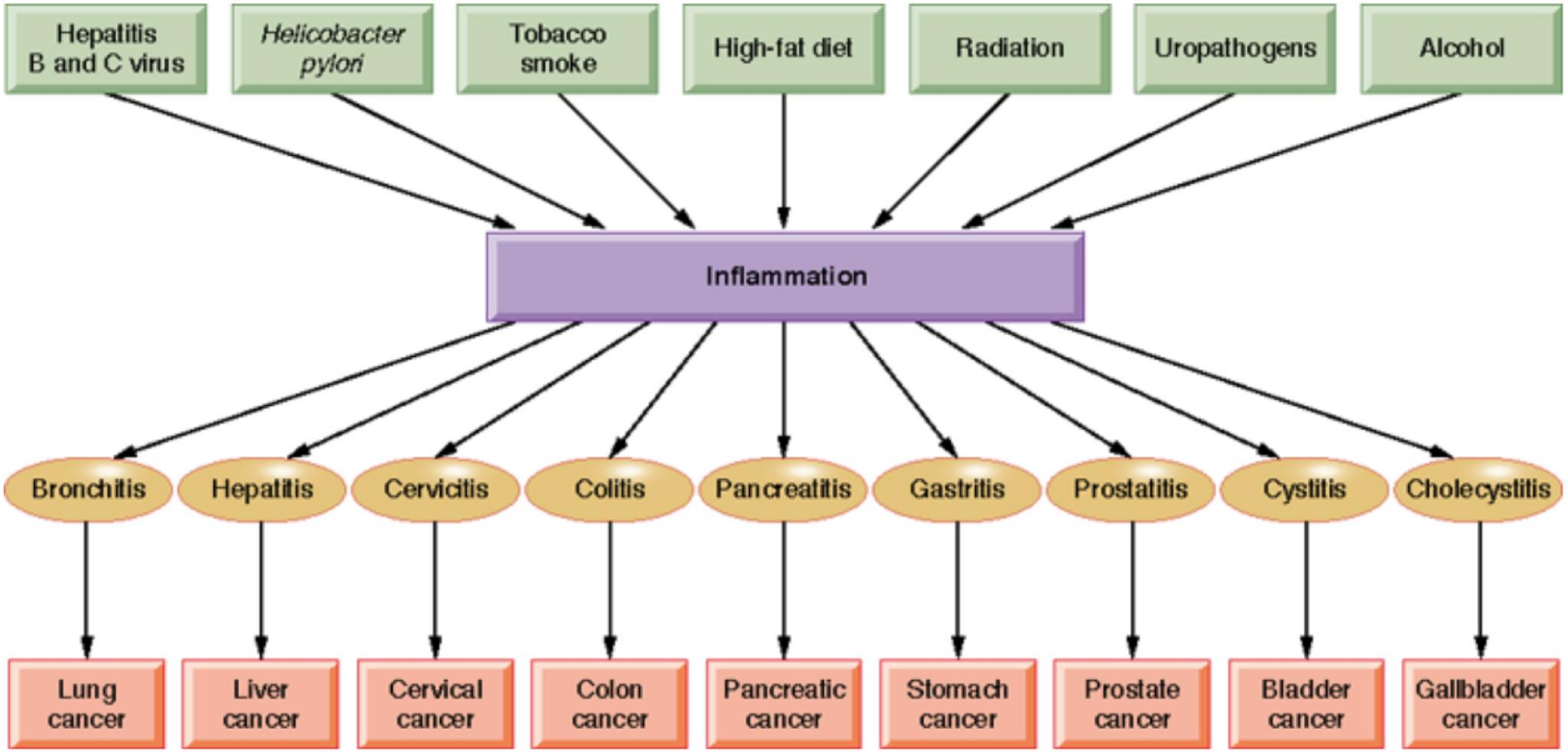


FIGURE 6.1

Origin of inflammation and its role in various cancers.

From: Aggarwal BB, et al. Inflammation and cancer: How hot is the link? Biochemical Pharmacology, 72, 2006, 1605-21

A Fire Extinguisher!

How to suppress inflammation activation safely?

….Sloan School of Management at M.I.T. and the Harvard Business School has created Pharmer's Market, however, we need a Farmer's Market…

New York Times, November, 2009

Farmer's Market

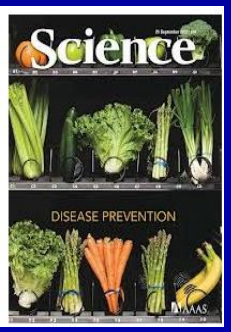
Anand P, Harikumar K and Aggarwal BB; Pharmaceutical Research, 2009

When Solution is Simple, God is Answering!

Albert Einstein

Hippocrates proclaimed ~2500 years ago

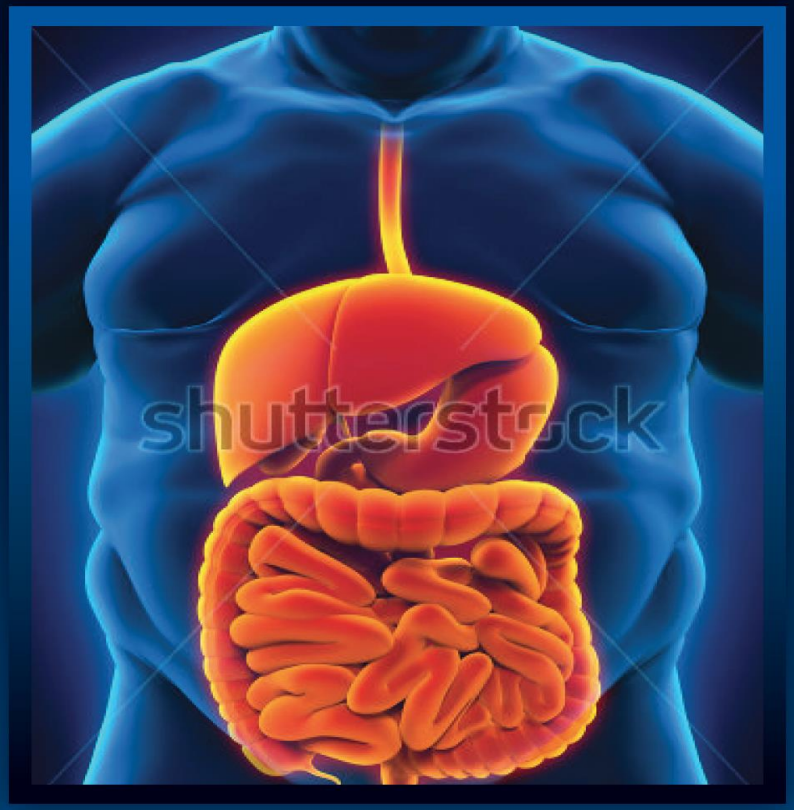
"Let food be thy medicine and medicine be thy food"



Sept 21st, 2012

Immunonutrition

Interactions of Diet, Genetics, and Inflammation



Edited by

Bharat B. Aggarwal • David Heber

CRC Press
Taylor & Francis Group

Antiinflammatory life style

Spices


Asian ginger
(*Alpinia galanga*)


Cloves
(*Eugenia caryophyllu*)


Fennel
(*Foeniculum vulgare*)


Fenugreek
(*Trigonella foenum graecum*)


Gamboge
(*Garcinia hanburyi*)


Holy basil
(*Ocimum sanctum*)


Onion
(*Allium cepa*)


Onion seed
(*Nigella sativa*)


Poppy seed
(*Papaver somniferum*)


Pomegranate
(*Punica granatum*)


Red chili
(*Capsicum annum*)


Sesame seed
(*Sesamum indicum*)


Turmeric
(*Curcuma longa*)

Ayurvedic Medicine


Aloe
(*Aloe vera*)


Ashwagandha
(*Withania somnifera*)


Boswellia
(*Boswellia serrata*)


Beauty berry
(*Callicarpa macrophylla*)


Chitrak
(*Plumbago zeylanica*)


False pepper
(*Embelia ribes*)


Guggulu
(*Commiphora mukul*)


Himalayan fir
(*Abies webbiana*)


Indigo
(*Polygonum tinctorium*)


Neem
(*Azadirachta indica*)


Picroliv
(*Picrorhiza kurroa*)


Pinecone ginger
(*Zingiber zerumbet*)


Rohitukine
(*Dysoxylum binectariferum*)


Veldt-grape
(*Cissus quadrangularis*)


Peacock ginger
(*Kaempferia pulchra*)

Fruits & Vegetables


Artichoke
(*Cynara cardunculus*)


Cauliflower
(*Brassica oleracea*)


Grapes
(*Vitis vinifera*)


Mullberry
(*Morus nigra*)


Soybean
(*Glycine max*)

Traditional Chinese Medicine


Evodia
(*Evodia rutaecarpa*)


Goldenseal
(*Hydrastis canadensis*)


God of thunder vine
(*Tripterygium wilfordii*)


Indigo
(*Polygonum tinctorium*)


Lacquer tree
(*Rhus verniciflua*)


Magnolia
(*Magnolia officinalis*)


Smoke tree
(*Cotinus coggygria*)

Song gen
(*Phellinus linteus*)

Others

Cottonseed oil
(*Gossypium*)

Cashew nut
(*Anacardium occidentale*)

Cork bush
(*Mundulea sericea*)

Elephant's foot
(*Elephantopus scaber Linn*)

Fire lily
(*Gloriosa superba*)

Ginger lily
(*Hedychium coronarium*)

Hop
(*Humulus lupulus L.*)

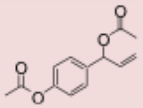
Horse chestnut
(*Aesculus hippocastanum*)

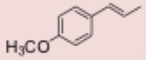
Palm
(*Elaeis guineensis*)

Oleander
(*Nerium oleander*)

Tropical rose mallow
(*Hibiscus vitifolius*)

Spices


1'-Actoxychav-icolacetate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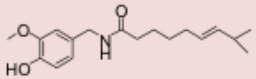
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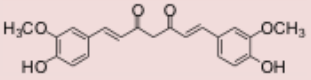
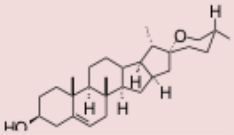
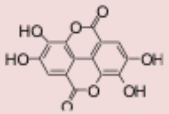
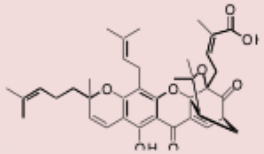
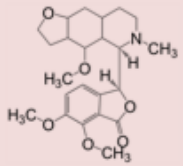
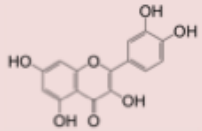

Curcumin

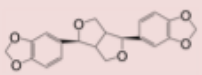

Diosgenin

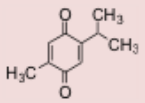

Ellagicacid

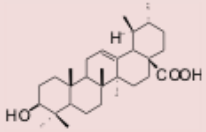

Gambogic acid


Noscapine

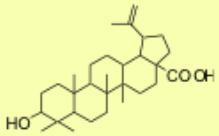

Quercetin

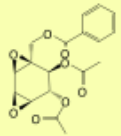

Sesamin

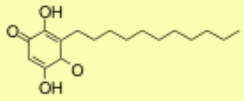

Thymoquinone

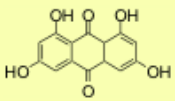

Ursolicacid

Ayurvedic Medicine


Betulinicacid


Crotepoxide


Embelin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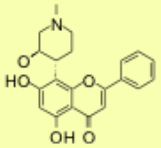
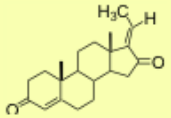
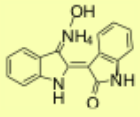
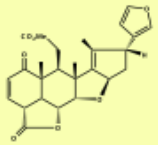
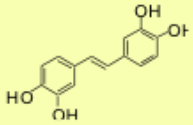
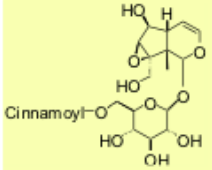

Flavopiridol

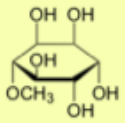

Guggulusterone


Indirubin 3'-monoxime


Nimbolide


Piceatannol


Picroliv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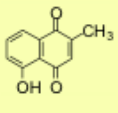
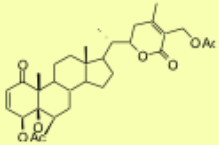
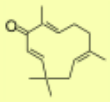
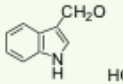
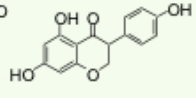

Plumbagin

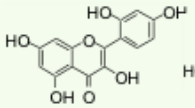

Withanolide


Zerumbone

Fruits & Vegetables


Indole 3-carbinol


Genistein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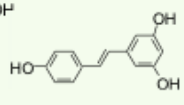
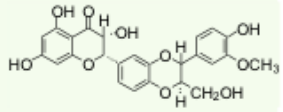
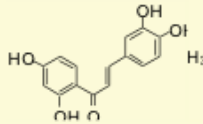

Resveratrol


Silymarin

Traditional Chinese Medicine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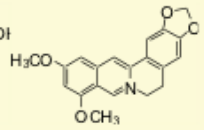
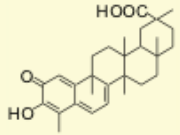
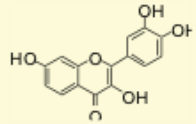
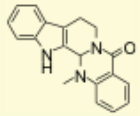
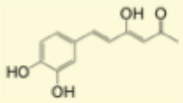
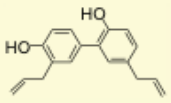

Berberin

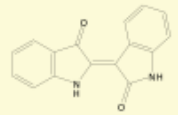

Celastrol


Fisetin

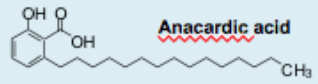

Evodiamine


Hispolon


Honokiol


Indirubin

Others


Anacardic acid

Coronarin-D

Deguelin

Gossypin

Gossypol

Isodeoxyelephantopin

Pentamethoxyflavone

Oleandrin

Thiocolchicoside

γ-Tocotrienol

Xanthohumol

From exotic spice to modern drug?

Singh S.

Cell. 2007 Sep 7;130(5):765-8.

The global demand for more affordable therapeutics and concerns about side effects of commonly used drugs are refocusing interest on Eastern traditional medicines, particularly those of India and China.

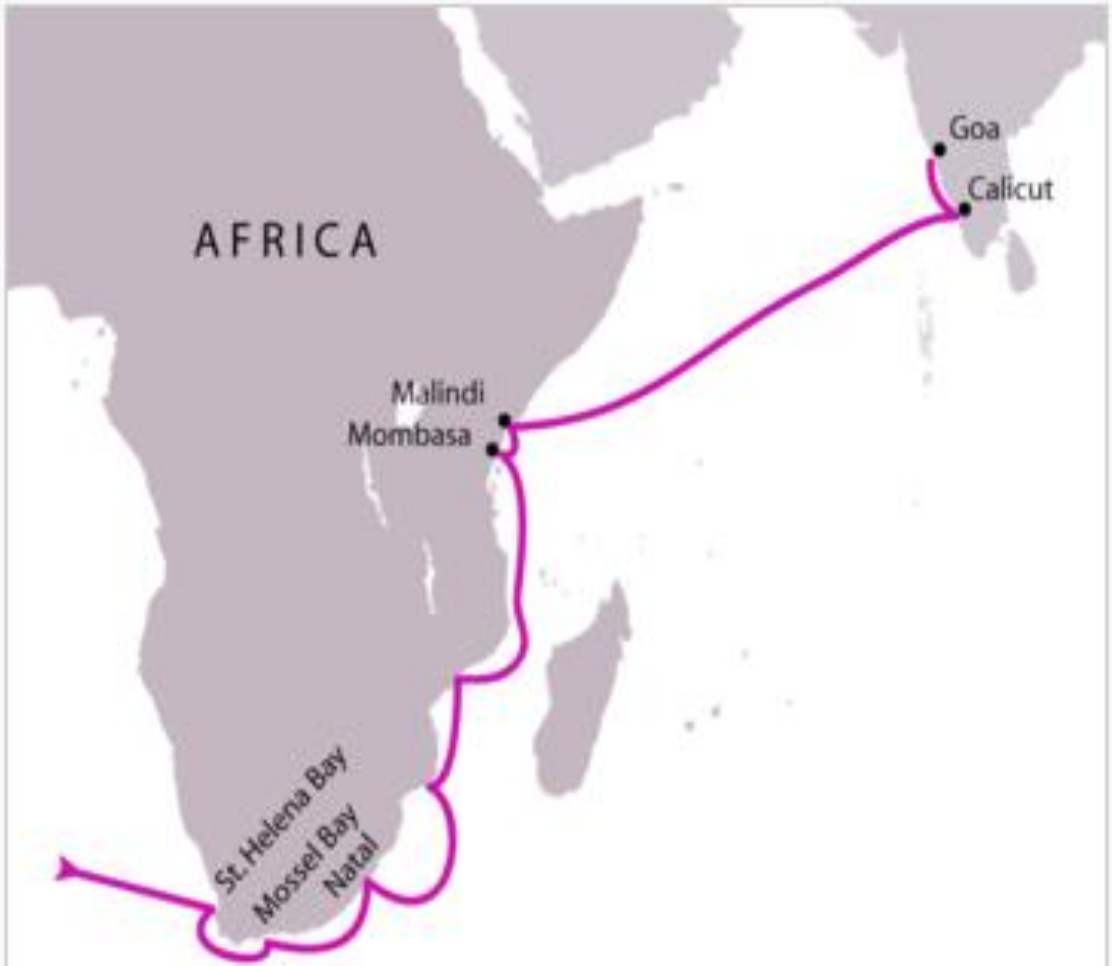
Add spices to your life!

Spice/epice

Spice/epice

Spice Route

Vasco da Gama lands at Calicut, May 20, 1498.



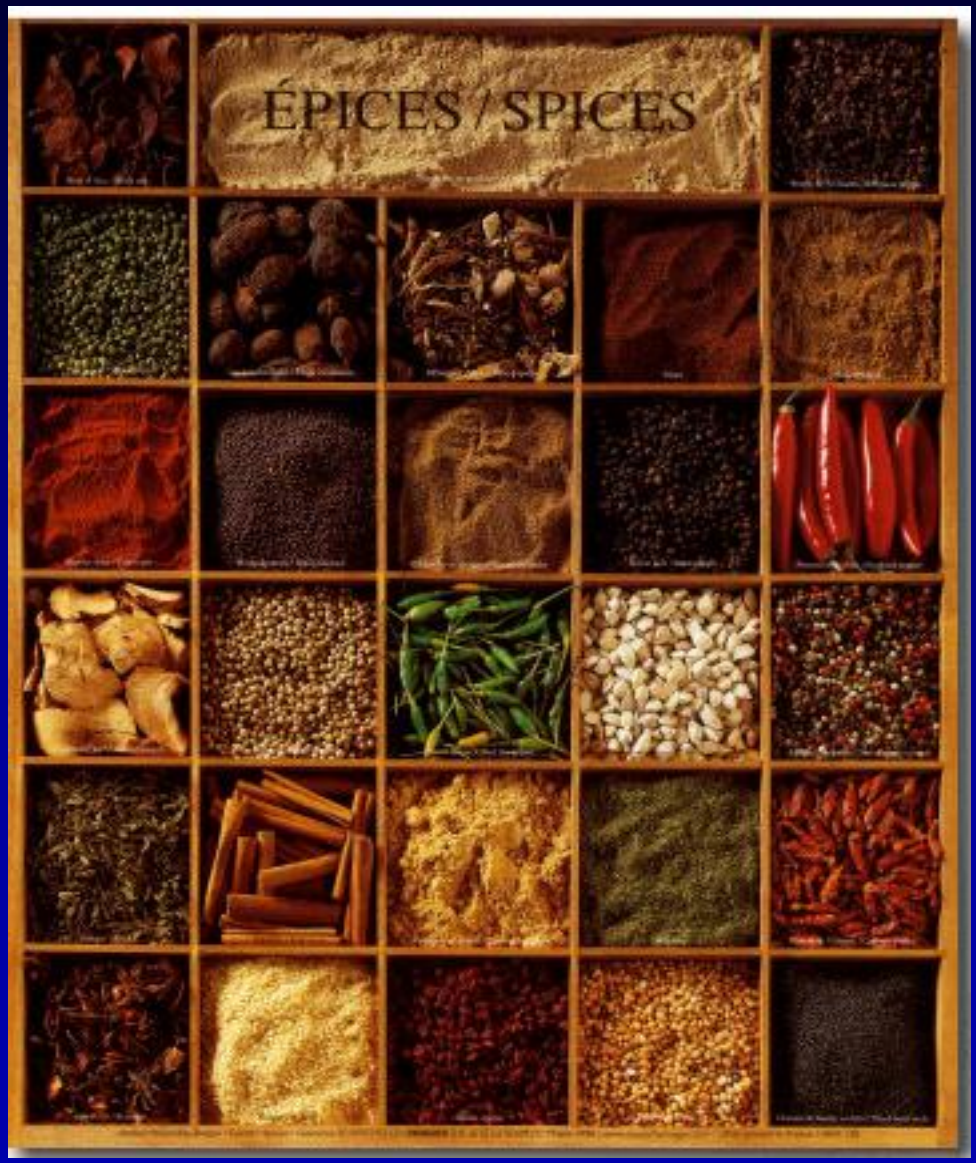
The route followed in Vasco da Gama's first voyage (1497 - 1499).

Juan Rodriguez Cabrillo:1542

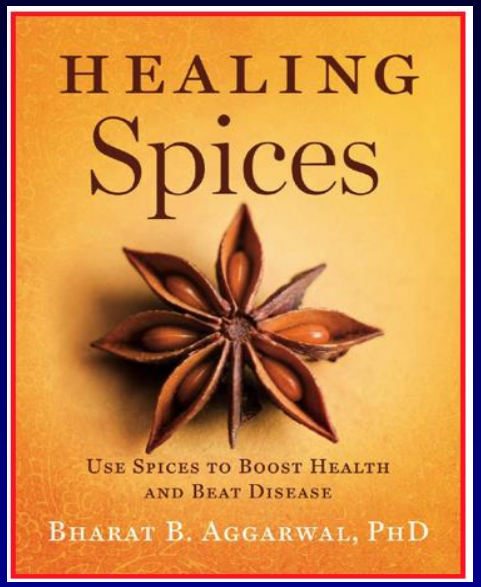
On June 27, 1542, Juan Rodríguez Cabrillo set sail with three vessels – *San Salvador, Victoria* and *San Miguel* – and about 250 men to explore the uncharted Pacific coast of the Americas. Sailing north from Navidad, Mexico, he hoped to find a passageway to the Atlantic or a coastal route to the Spice Islands (Moluccas) and the riches of Asia. At that time, no one had any idea of the vast expanse of the Pacific Ocean.

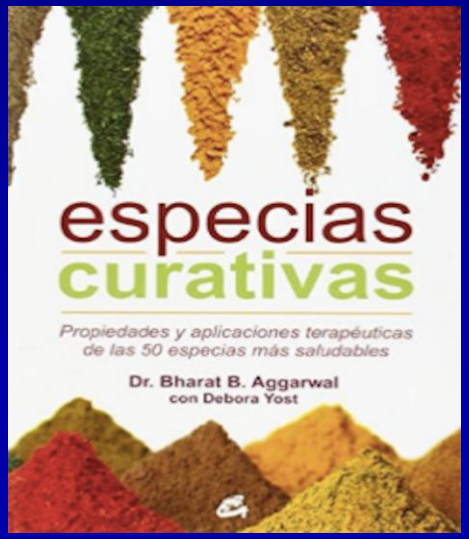
On April 14, 1543, Cabrillo's ships returned to Navidad, Mexico. The expedition, like those of Soto and Coronado, was considered a failure. They found no golden treasure, no exotic spices and no trade route to Asia. But, they returned with something even more valuable. They returned with the first recorded account of the people, places and climate of California.

Dietary Spices



Healing Spices





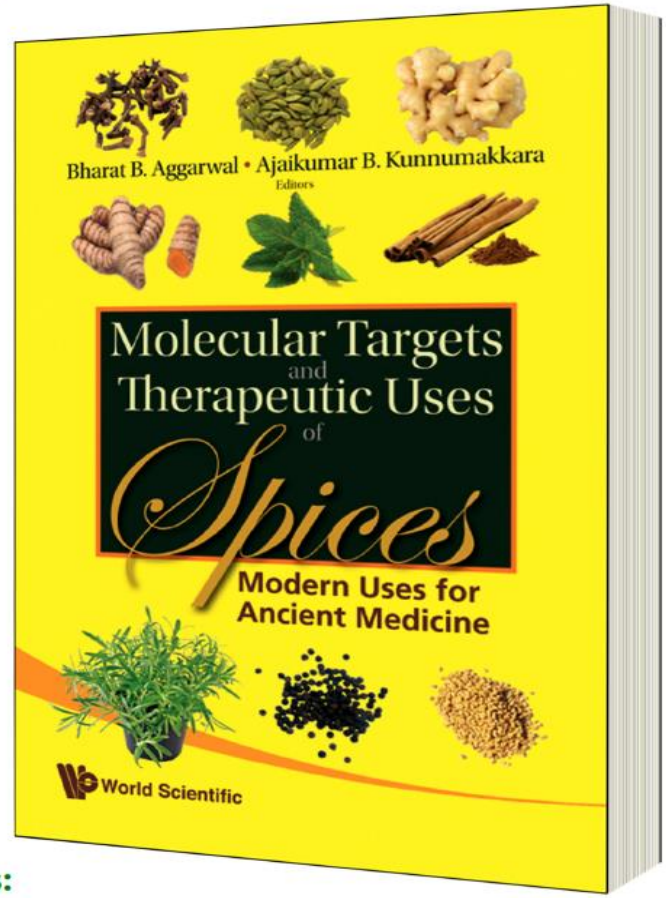
TNF blockers

Connecting Great Minds

MOLECULAR TARGETS AND THERAPEUTIC USES OF SPICES

Modern Uses for Ancient Medicine

edited by Bharat B Aggarwal *(The University of Texas M D Anderson Cancer Center, Houston, Texas, USA)* & Ajaikumar B Kunnumakkara *(National Institute of Health, Bethesda, MD, USA)*



Most therapeutics available today are highly toxic,

Contents:

Spicy Obsession!

Add Spice to your Life!

Curry in Hurry!

Spice it up!

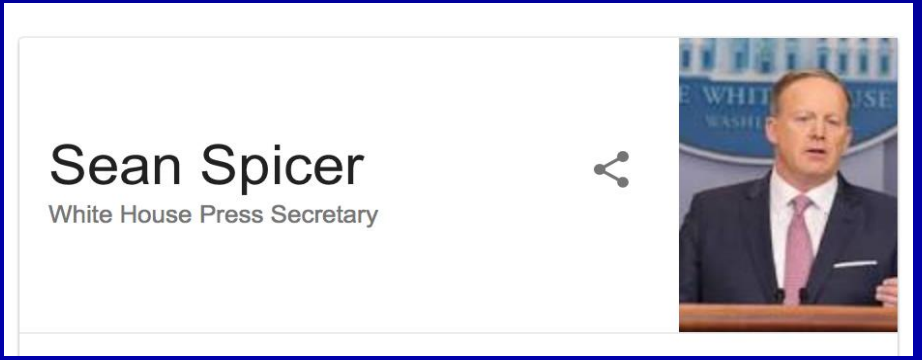
Spice Queen!

Spice Goddess!

Spicy Names

Anise
Ginger
Rosemary
Mace
Pepper
Basil
Tulsi

Sage
Jasmine
Angelica
Curry
Chilli
Spicer



Healing with Spices

Julie Chugh

Spices

Allspice 	Almond 	Amchur 	Aniseed 	Asafoetida 
Basil 	Bay Leaves 	Black Cumin 	Black Pepper 	Caraway 
Cardamom 	Celery 	Chili 	Cinnamon 	Clove 
Cocoa 	Coconut 	Coriander 	Cumin 	Curry Leaf 
Fennel 	Fenugreek 	Galangal 	Garlic 	Ginger 

Spices

Horseradish 	Juniper Berry 	Kokum 	Lemongrass 	Marjoram 
Mint 	Mustard Seed 	Nutmeg 	Onion 	Oregano 
Parsley 	Pomegranate 	Pumpkin Seed 	Rosemary 	Saffron 
Sage 	Sesame Seed 	Star Anise 	Tomato 	Tamarind 
Thyme 	Turmeric 	Vanilla 	Wasabi 	

Cancer

- *Amchur*
- *Asafoetida*
- *Basil*
- *Bay Leaves*
- *Black Cumin*
- *Black Pepper*
- *Caraway*
- *Cardamom*
- *Chili*
- *Cinnamon*
- *Cloves*
- *Coconut*
- *Coriander*
- *Cumin*
- *Curry Leaf*
- *Fennel*
- *Fenugreek*
- *Galangal*
- *Garlic*
- *Ginger*
- *Horseradish*
- *Juniper berry*
- *Kokum*
- *Lemongrass*
- *Marjoram*
- *Mint*
- *Mustard Seed*
- *Nutmeg*
- *Onion*
- *Oregano*
- *Parsley*
- *Pomegranate*
- *Rosemary*
- *Sesame Seed*
- *Star Anise*
- *Tamarind*
- *Thyme*
- *Tomato*
- *Turmeric*
- *Vanilla*
- *Wasabi*

Pulmonary Disorders

Asthma, Bronchitis, Cystic Fibrosis, Chronic Obstructive Pulmonary Disease, Flu, Pneumonia, Tuberculosis

- ***Allspice***
- ***Aniseeds***
- ***Asafoetida***
- ***Black Cumin***
- ***Caraway***
- ***Cardamom***
- ***Cumin***
- ***Garlic***
- ***Ginger***
- ***Horseradish***
- ***Juniper Berry***
- ***Mint***
- ***Mustard Seed***
- ***Pomegranate***
- ***Star Anise***
- ***Thyme***
- ***Turmeric***

Cardiovascular Disorders

Anemia, Angina, Blood Clots, High Blood Pressure, Heart Attack, Heart Disease, Heart Failure, Hypertension, Sickle Cell Disease

- *Allspice*
- *Almond*
- *Black Cumin*
- *Black Pepper*
- *Caraway*
- *Cardamom*
- *Celery*
- *Chili*
- *Cinnamon*
- *Clove*
- *Cocoa*
- *Coriander*
- *Fennel*
- *Garlic*
- *Ginger*
- *Juniper Berry*
- *Marjoram*
- *Mustard Seed*
- *Onion*
- *Oregano*
- *Parsley*
- *Pomegranate*
- *Pumpkin Seed*
- *Rosemary*
- *Saffron*
- *Sage*
- *Sesame Seed*
- *Tamarind*
- *Thyme*
- *Tomato*
- *Vanilla*
- *Wasabi*

Neurological Disorders

Alzheimer's Disease, Dementia, Depression, Epilepsy, Headache, Huntington's Disease, Insomnia, Memory Loss, Migraine, Multiple Sclerosis, Nerve Pain, Pain (Chronic), Parkinson's Disease, Stress, Stroke

- *Almond*
- *Basil*
- *Black Cumin*
- *Black Pepper*
- *Celery*
- *Chili*
- *Cinnamon*
- *Cocoa*
- *Coconut*
- *Cumin*
- *Curry Leaf*
- *Fennel*
- *Garlic*
- *Ginger*
- *Juniper Berry*
- *Lemongrass*
- *Marjoram*
- *Mint*
- *Nutmeg*
- *Oregano*
- *Pomegranate*
- *Rosemary*
- *Saffron*
- *Sage*
- *Sesame Seed*
- *Thyme*
- *Tomato*
- *Turmeric*

Metabolic Syndromes

Diabetes, Insulin Resistance, Obesity

- *Almonds*
- *Amchur*
- *Basil*
- *Bay Leaves*
- *Caraway*
- *Chili*
- *Cinnamon*
- *Cocoa*
- *Coconut*
- *Coriander*
- *Cumin*
- *Curry Leaf*
- *Fenugreek*
- *Galangal*
- *Garlic*
- *Juniper Berry*
- *Kokum*
- *Lemongrass*
- *Mustard Seed*
- *Onion*
- *Oregano*
- *Parsley*
- *Pomegranate*
- *Rosemary*
- *Sage*
- *Tamarind*
- *Turmeric*

Gastrointestinal Disorders

Bloating, Colic, Colitis, Constipation, Dehydration, Diarrhea, Dysphagia, Flatulence, Food Poisoning, Gall Stones, Heartburn, Hemorrhoids, Indigestion, Irritable Bowel Disease, Morning Sickness, Motion Sickness, Nausea, Stomach Ache

- *Allspice*
- *Aniseeds*
- *Asafoetida*
- *Bay Leaves*
- *Black Cumin*
- *Black Pepper*
- *Caraway*
- *Cardamom*
- *Chili*
- *Cinnamon*
- *Cloves*
- *Coriander*
- *Cumin*
- *Fennel*
- *Fenugreek*
- *Ginger*
- *Horseradish*
- *Juniper Berry*
- *Kokum*
- *Marjoram*
- *Mint*
- *Nutmeg*
- *Oregano*
- *Parsley*
- *Pomegranate*
- *Thyme*
- *Turmeric*
- *Wasabi*

Skin Disorders

Acne, Age Spots, Blemishes, Cold Sores, Dermatitis, Eczema, Rash, Rosacea, Scars, Ulcers, Vitiligo, Wrinkles

- *Aniseed*
- *Basil*
- *Bay Leaves*
- *Black Cumin*
- *Black Pepper*
- *Cardamom*
- *Celery*
- *Chili*
- *Cinnamon*
- *Cloves*
- *Cocoa*
- *Coconut*
- *Coriander*
- *Galangal*
- *Garlic*
- *Juniper Berry*
- *Kokum*
- *Marjoram*
- *Nutmeg*
- *Onion*
- *Oregano*
- *Parsley*
- *Pomegranate*
- *Rosemary*
- *Sage*
- *Star Anise*
- *Thyme*
- *Turmeric*
- *Wasabi*

Autoimmune Disorders

Alopecia, Atherosclerosis, Crohn's Disease, Dermatitis, Inflammatory Bowel Disease, Macular Degeneration, Multiple Sclerosis, Preeclampsia, Psoriasis

- ***Black Cumin***
- ***Black Pepper***
- ***Chili***
- ***Cloves***
- ***Cocoa***
- ***Coconuts***
- ***Coriander***
- ***Cumin***
- ***Garlic***
- ***Juniper Berry***
- ***Onion***
- ***Pomegranate***
- ***Pumpkin Seed***
- ***Rosemary***
- ***Saffron***
- ***Sage***
- ***Star Anise***
- ***Tamarind***
- ***Tomato***
- ***Turmeric***
- ***Wasabi***

Infections

Bacterial Infection, Cold, Conjunctivitis, Ear Infection, Eye Infection, Fungal Infection, Genital Herpes, HIV/AIDS, Kidney Stones, Malaria, Mononucleosis, Parasitic Infection, Periodontal Disease, Septic Shock, Strep Throat, Thrush, Urinary Tract Infection, Vaginal Yeast Infection

- ***Amchur***
- ***Basil***
- ***Cardamom***
- ***Celery***
- ***Cinnamon***
- ***Cloves***
- ***Coconut***
- ***Coriander***
- ***Fenugreek***
- ***Garlic***
- ***Horseradish***
- ***Juniper Berry***
- ***Marjoram***
- ***Mint***
- ***Lemongrass***
- ***Oregano***
- ***Sage***
- ***Star Anise***
- ***Tamarind***
- ***Thyme***

Inflammatory Disorders

Allergies, Arthritis, Benign Prostate Hyperplasia, Cataracts, Gingivitis, Glaucoma, Gout, Gum Disease, Hepatitis B, Hepatitis C, Liver Disease, Nasal Congestion, Osteoporosis, PCOS, Sinusitis

- *Allspice*
- *Amchur*
- *Basil*
- *Bay Leaves*
- *Black Cumin*
- *Black Pepper*
- *Cardamom*
- *Celery*
- *Chili*
- *Cinnamon*
- *Clove*
- *Coriander*
- *Cumin*
- *Fennel*
- *Fenugreek*
- *Garlic*
- *Ginger*
- *Galangal*
- *Horseradish*
- *Juniper Berry*
- *Mint*
- *Mustard Seed*
- *Onion*
- *Oregano*
- *Pomegranate*
- *Pumpkin Seed*
- *Rosemary*
- *Star Anise*
- *Tamarind*
- *Tomato*
- *Turmeric*
- *Wasabi*

Other Disorders

Aging, Alcohol Abuse, Anxiety, Bad Breath, Breastfeeding Issues, Cough, Dry Eye Syndrome, Erectile Dysfunction, Fatigue, Hearing Loss, High Cholesterol, Hirsutism, Immune Decline, Infertility, LDL, Lead Poisoning, Menopause Issues, Menstrual Cramps, Mosquito Bites, Neck Pain, Premenstrual Syndrome, Sexual Desire (low), Sore Throat, Tension, Thyroid, Tooth Decay, Toothache, Urinary Incontinence, Wounds

- *Almond*
- *Amchur*
- *Aniseeds*
- *Basil*
- *Bay Leaves*
- *Black Cumin*
- *Black Pepper*
- *Caraway*
- *Cardamom*
- *Celery*
- *Chili*
- *Cinnamon*
- *Clove*
- *Cocoa*
- *Coriander*
- *Curry Leaf*
- *Fennel*
- *Fenugreek*
- *Garlic*
- *Ginger*
- *Horseradish*
- *Lemongrass*
- *Mint*
- *Mustard Seed*
- *Nutmeg*
- *Onion*
- *Oregano*
- *Pomegranate*
- *Pumpkin Seed*
- *Rosemary*
- *Saffron*
- *Sage*
- *Sesame Seed*
- *Star Anise*
- *Tamarind*
- *Thyme*
- *Tomato*
- *Turmeric*
- *Wasabi*

Saffron for Depression

Hydro-alcoholic extract of Crocus sativus L. versus fluoxetine in the treatment of mild to moderate depression: *a double-blind, randomized pilot trial.*

Noorbala AA, et al J Ethnopharmacol. 2005 Feb 28;97(2):281-4.

Saffron is the world's most expensive spice and apart from its traditional value as a food additive, recent studies indicate several therapeutic effects for saffron.

It is used for depression in Persian traditional medicine. Our objective was to compare the efficacy of hydro-alcoholic extract of Crocus sativus (stigma) with fluoxetine in the treatment of mild to moderate depression in a 6-week double-blind, randomized trial.

Forty adult outpatients *with mild to moderate depression participated in the trial.*

In this double-blind, single-center trial and randomized trial, patients were randomly assigned to receive capsules of ***saffron 30 mg/day*** *(BD) (Group 1) and* ***capsule of fluoxetine 20 mg/day*** *(BD) (Group 2)* ***for a 6-week study.***

Saffron at this dose was found to be effective similar to fluoxetine in the treatment of mild to moderate depression. There were no significant differences in the two groups in terms of observed side effects.

The results of this study indicate the efficacy of Crocus sativus in the treatment of mild to moderate depression.

Saffron & Depression

A double-blind, randomized and placebo-controlled trial of Saffron (Crocus sativus L.) in the treatment of anxiety and depression. Mazidi M, etal…J Complement Integr Med. 2016 Jun 1;13(2):195-9.

Assessed the effects of saffron extract for the treatment of anxiety and depression using a 12-week double-blind, placebo-controlled trial design.

Sixty adult patients with anxiety and depression were randomized to receive a 50 mg saffron capsule (Crocus sativus L. stigma) or a placebo capsule twice daily for 12 weeks. 54 subjects completed the trial.

Saffron appears to have a significant impact in the treatment of anxiety and depression disorder.

Saffron supplements modulate serum pro-oxidant-antioxidant balance in patients with metabolic syndrome: A randomized, placebo-controlled clinical trial. Kermani T etal Avicenna J Phytomed. 2015 Sep-Oct;5(5):427-33.

Investigated the effect of a saffron supplement, given at a dose of 100 mg/kg, on prooxidant-antioxidant balance (PAB) in individuals with metabolic syndrome.

A randomized, placebo-controlled trial design was used in 75 subjects with metabolic syndrome who were randomly allocated to one of two study groups: the case group received 100mg/kg saffron and (2) the placebo control group received placebo for 12 weeks.

The serum PAB assay was applied to all subjects before (week 0) and after (weeks 6 and 12) the intervention. There was a significant reduction in serum PAB between week 0 to week 6 and also from week 0 to week 12.

Saffron supplements can modulate serum PAB in subjects with metabolic syndrome, implying an improvement in some aspects of oxidative stress or antioxidant protection.

Antioxidant property of Saffron in man.

Verma SK1, Bordia A. Indian J Med Sci. 1998 May;52(5):205-7. Indian J Med Sci. 1998 May;52(5):205-7.

***50 mg of Saffron** dissolved in 100 ml of milk was administered twice a day to **20 human subjects**.*

*Lipoprotein oxidation susceptibility (LOS) was estimated initially and after **3 and 6 weeks.***

There was a constant decrease in LOS during this period.

From a mean of 66.4 it decreased to 38.3 in 10 healthy individuals and from 76.0 to 48.8 in 10 patients of coronary artery disease (CAD).

*The **significant fall in LOS** indicates the potential of Saffron as an antioxidant.*

Ginger and Nausea

- ***Ginger-Mechanism of action in chemotherapy-induced nausea and vomiting***
  - ***Marx W et al Crit Rev Food Sci Nutr. 2017 Jan 2;57(1):141-146.***

- ***Chemotherapy-induced nausea and vomiting (CINV) is a significant burden to patients undergoing chemotherapy.***

- ***Ginger has been traditionally used as a folk remedy for gastrointestinal complaints and has been suggested as a viable adjuvant treatment for nausea and vomiting in the cancer context.***

- ***Substantial research has revealed ginger affects chemotherapy patients who experience nausea and vomiting.***

- ***Bioactive compounds from ginger, particularly the gingerol and shogaol, interact with pathways linked to CINV.***

- ***These properties include 5-HT3, substance P, and acetylcholine receptor antagonism; antiinflammatory properties; and modulation of cellular redox signaling, vasopressin release, gastrointestinal motility, and gastric emptying rate.***

- ***Ginger possesses multiple properties that could be beneficial in reducing CINV.***

Gingerol and Nausea

A phase II randomized double-blind placebo-controlled study of 6-gingerol as an anti-emetic in solid tumor patients receiving moderately to highly emetogenic chemotherapy.
Konmun J etal Med Oncol. 2017 Apr;34(4):69.

Several clinical trials examined crude ginger powder for preventing chemotherapy-induced nausea and vomiting (CINV).

Patients who received moderately to highly emetogenic adjuvant chemotherapy were randomized to receive 6-gingerol 10 mg or placebo orally twice daily for 12 weeks.

Ondansetron, metoclopramide, and dexamethasone were given to all patients.

Eighty-eight patients were randomized to receive 6-gingerol (N = 42) or placebo (N = 46).
Most patients received highly emetogenic chemotherapy (93%).

Overall CR rate was significantly higher in 6-gingerol group as compared with that of the placebo.

No toxicity related to 6-gingerol was observed.
Patients treated with 6-gingerol reported significantly less grade 3 fatigue.

6-Gingerol significantly improved overall CR rate in CINV, appetite and quality of life in cancer patients receiving adjuvant chemotherapy.

Ginger and Fenugreek for the Heart

Effect of ginger (Zingiber officinale) and fenugreek (Trigonella foenumgraecum) on blood lipids, blood sugar and platelet aggregation in patients with coronary artery disease. Bordia A, et al.. Prostaglandins Leukot Essent Fatty Acids. 1997 May;56(5):379-84.

The subjects included in this study were healthy individuals, patients with coronary artery disease (CAD), and patients with non-insulin-dependent diabetes mellitus (NIDDM) who either had CAD or were without CAD.

In patients with CAD powdered ginger administered in a dose of 4 g daily for 3 months did not affect ADP- and epinephrine-induced platelet aggregation.

However, a single dose of 10 g powdered ginger administered to CAD patients produced a significant reduction in platelet aggregation induced by the two agonists.

Ginger did not affect the blood lipids and blood sugar. Fenugreek given in a dose of 2.5 g twice daily for 3 months to healthy individuals did not affect the blood lipids and blood sugar.

However, administered in the same daily dose for the same duration to CAD patients also with NIDDM, fenugreek decreased significantly the blood lipids without affecting the HDL-c.
When administered in the same daily dose to NIDDM (non-CAD) patients (mild cases), fenugreek reduced significantly the blood sugar (fasting and post prandial).

In severe NIDDM cases, blood sugar (both fasting and post prandial) was only slightly reduced. Fenugreek administration did not affect platelet aggregation, fibrinolytic activity and fibrinogen.

Cardamom & Obesity

Cardamom supplementation improves inflammatory and oxidative stress biomarkers in hyperlipidemic, overweight, and obese pre-diabetic women: A randomized double-blind clinical trial.

Kazemi S, etal. J Sci Food Agric. 2017 May 8. doi: 10.1002/jsfa.8414.

The purpose of the present study was to evaluate the effects of cardamom (Elettaria Cardamomum) supplementation on inflammation and oxidative stress in hyperlipidemic, overweight, and obese pre-diabetic women.

METHODS: This randomized, placebo-controlled, double-blind clinical trial was conducted on 80 pre-diabetic subjects. They randomly received the cardamom supplement (n = 40, 3 g/d-1) or identical inert placebo (n = 40) for eight weeks. Serum concentrations of high-sensitivity C-reactive protein (hs-CRP), interleukin-6 (IL-6), tumour necrosis factor-alpha (TNF-α), total antioxidant capacity (TAC), malondialdehyde (MDA), protein carbonyl (PC), and erythrocyte superoxide dismutase (SOD) and glutathione reductase (GR) activity were analyzed at the baseline and after intervention.

After the adjustment of some covariates, cardamom supplementation significantly decreased serum hs-CRP, hs-CRP IL-6-1 ratio, and MDA compared with the placebo group.

Cardamom could improve some parameters of inflammation and oxidative stress in pre-diabetic subjects.
Thus, it may be useful in reducing complications associated with inflammation and oxidative stress in these patients.

Cinnamon & Diabetes

Cinnamon improves glucose and lipids of people with type 2 diabetes.

Khan A, …Anderson RA. Diabetes Care. 2003 Dec;26(12):3215-8.

The objective of this study was to determine whether cinnamon improves blood glucose, triglyceride, total cholesterol, HDL cholesterol, and LDL cholesterol levels in people with type 2 diabetes.

A total of 60 people with type 2 diabetes, 30 men and 30 women aged 52.2 +/- 6.32 years, were divided randomly into six groups. Groups 1, 2, and 3 consumed 1, 3, or 6 g of cinnamon daily, respectively, and groups 4, 5, and 6 were given placebo capsules corresponding to the number of capsules consumed for the three levels of cinnamon.
The cinnamon was consumed for 40 days followed by a 20-day washout period.

After 40 days, all three levels of cinnamon reduced the mean fasting serum glucose (18-29%), triglyceride (23-30%), LDL cholesterol (7-27%), and total cholesterol (12-26%) levels; no significant changes were noted in the placebo groups. Changes in HDL cholesterol were not significant.

The results of this study demonstrate that intake of 1, 3, or 6 g of cinnamon per day reduces serum glucose, triglyceride, LDL cholesterol, and total cholesterol in people with type 2 diabetes and suggest that the inclusion of cinnamon in the diet of people with type 2 diabetes will reduce risk factors associated with diabetes and cardiovascular diseases.

Crawford , P Effectiveness of cinnamon for lowering hemoglobin A1C in patients with type 2 diabetes: A randomized, controlled trial. J Am Board Fam Med. 2009;22:507–12.

Black pepper and Drug Metabolism-1

Pharmacokinetic interaction of single dose of piperine with steady-state carbamazepine in epilepsy patients. Pattanaik S etal; Phytother Res. 2009 Sep;23(9):1281-6.

- ***Piperine, the active principle of piper species, is commonly used as a spice and adjuvant in various traditional systems of medicine.***
- ***It has been known as a bioavailability-enhancer.***

- ***The present study aimed at evaluating the effect of piperine on the steady-state pharmacokinetics of a single dose of carbamazepine in poorly controlled epilepsy patients on carbamazepine monotherapy.***

- ***Patients (n = 10 each) receiving either 300 mg or 500 mg dose of carbamazepine twice daily were selected.***
- ***After administration of carbamazepine, venous blood samples were collected .***

- ***Subsequently, piperine (20 mg p.o.) was administered along with carbamazepine and samples were collected similarly.***

- ***Piperine significantly increased the mean plasma concentrations of carbamazepine at most of the time points in both dose groups.***

- ***Piperine could significantly enhance the oral bioavailability of carbamazepine, possibly by decreasing the elimination and/or by increasing its absorption.***

Black pepper and Drug Metabolism-2

Effect of piperine on the steady-state pharmacokinetics of phenytoin in patients with epilepsy. ***Pattanaik S etal Phytother Res. 2006;20(8):683-6.***

Piperine, the active principle of Piper longum, Piper nigrum and Zingiber officinalis, has been reported to enhance the oral bioavailability of phenytoin in human volunteers.

The objective of this study was to explore the effect of a single dose of piperine in patients with uncontrolled epilepsy on the steady-state pharmacokinetics of phenytoin.

Two groups of 10 patients each receiving either a 150 mg or 200 mg twice daily dose of phenytoin were selected.

On the next study day, piperine 20 mg was administered along with phenytoin and samples were collected similarly.

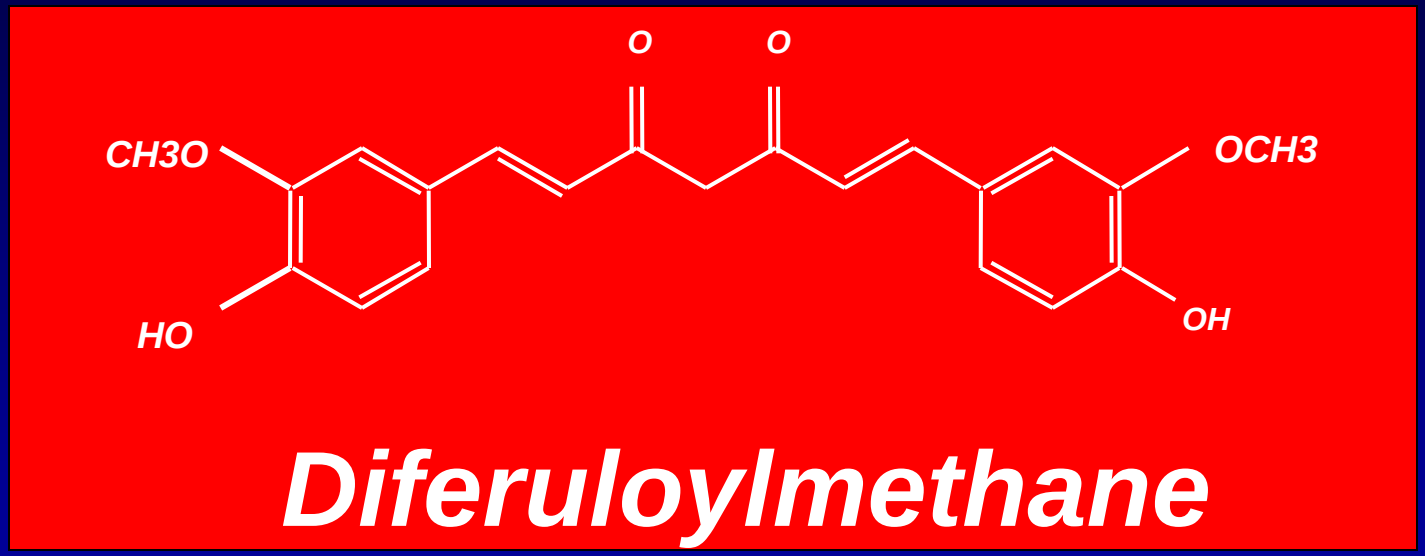
Piperine increased significantly the mean plasma concentration of phenytoin at most of the time points in both dose groups.

The results showed that piperine enhanced the bioavailability of phenytoin significantly, possibly by increasing the absorption.

Curcumin:

Getting Back to Our Roots!

Structure of Curcumin
From turmeric (curry powder)



Diferuloylmethane

Milobedzka J., von Kostnecki St, and Lampe V: Zur Kenntnis des curcumins. Ber Deutsch Chem Ges, 1910, 43, 2163-2170

Names of turmeric in different languages

Arabic Kurkum, Uqdah safra
Armenian Toormerik, Turmerig
Assamese Halodhi
Bengali Halud
Bulgarian Kurkuma
Burmese Hsanwen, Sanwin, Sanae, Nanwin
Catalan Cu´rcuma
Chinese Yu chin, Yu jin, Wohng geung, Geung wohng, Wat gam, Huang jiang, Jiang huang, Yu jin, Yu jin xiang gen
Croatian Indijski s˘afran, Kurkuma
Czech Kurkuma, Indicky´ S˘afra´n,Z˘luty´kor˘en, Z˘luty´za´zvor
Dhivehi Reen'dhoo
Danish Gurkemeje
Dutch Geelwortel, Kurkuma Tarmeriek, Koenjit, Koenir
English Indian saffron
Esperanto Kurkumo
Estonian Harilik kurkuma, Kurkum, Pikk kollajuur, Lo˜hnav kollajuur, Harilik kurkuma, Kurkum, Pikk kollajuur, Lo˜hnav kollajuur
Farsi Zardchubeh
Finnish Kurkuma, Keltajuuri
French Curcuma, Safran des Indes, Terre-me´rite, Souchet des Indes
Galician Cu´rcuma
German Curcuma, Kurkuma, Indischer Safran, Gelbwurz
Greek Kitrinoriza, Kourkoumi, Kourkoumas
Gujarati Halad, Haldar
Hebrew Kurkum
Hindi Haldi
Hungarian Kurkuma, Sa´rga gyo¨mbe´rgyo¨ke´r
Icelandic Tu´rmerik
Indonesian Kunyit, Kunir; Daun kunyit
Italian Curcuma
Japanese Ukon, Tamerikku
Kannada Arishina, Arisina
Khmer Romiet, Lomiet, Lamiet
Korean Kang-hwang, Keolkuma Kolkuma, Sim-hwang, Teomerik, Tomerik, Tumerik, Ulgum, Ulgumun
Laotian Khi min khun, Khmin khun
Latvian Kurkuma
Lithuanian Ciberz˘ole˙, Kurkuma, Daz˘ine˙ ciberz˘ole˙
Malay Kunyit basah
Malayalam Manjal
Marathi Halad
Nepali Haldi, Hardi, Besar
Norwegian Gurkemeie
Pahlavi Zard-choobag
Pashto Zarchoba
Polish Kurkuma, Ostryz˙ długi, Szafran indyjski
Portuguese Ac¸afra˜o da I´ndia, Curcuma
Punjabi Haldi
Romanian Curcuma˘
Russian Koren, kurkumy, Kurkuma
Singhalese Kaha
Slovak Kurkuma
Slovenian Kurkuma
Spanish Curcuma, Azafra´n arabe
Swahili Manjano
Swedish Gurkmeja
Tagalog Dilaw
Tamil Manjal
Telugu Haridra, Pasupu
Thai Kha min chan, Kha min; Wanchakmadluk
Tibetan Gaser, Sga ser
Turkish Hint safranı, Sarı boya, Zerdec¸al, Safran ko¨ku¨, Zerdali, Zerdec¸o¨p, Zerdecube
Ukrainian Kurkuma
Urdu Haldi, Zard chub
Vietnamese Bot nghe, Cu nghe, Nghe, Uat kim, Khuong hoang
Yiddish Kurkume

Names of turmeric in Sanskrit

Ameshta, bahula, bhadra, dhirgharaja, gandaplashika, gauri, gharshani, haldi, haridra, harita, hemaragi, hemaragini, hrivilasini, jayanti, jwarantika, kanchani, kaveri, krimighana, kshamada, kshapa, lakshmi, mangalaprada, mangalya, mehagni, nisha, nishakhya, nishawa, pavitra, pinga, pinja, pita, patavaluka, pitika, rabhangavasa, ranjani, ratrimanika, shifa, shiva, shobhana, shyama, soughagouhaya, suvarna, suvarnavarna, tamasini, umavara, vauragi, varavarnini, varnadatri, varnini, vishagni, yamini, yohitapriya, yuvati

Curcumin From turmeric

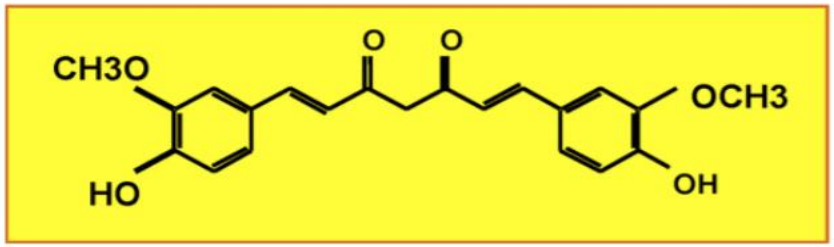
Curcuma longa

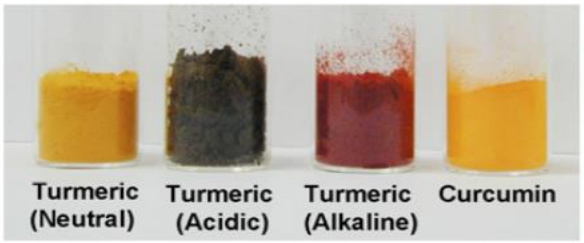
Rhizome

Dried rhizome

Blend
(Turmeric)

Extract in 95%
ethanol for 24 h,
filter and dry





Tetrahydrocurcumin (THC)

Curcumin based products

Fig 1

Capsules

Candy

Cream

Soup

Gummy

Drinks

Face Cream

Drink

Soap


Trends in Pharmacological Sciences
Trends Pharmacol. Sci. February 2006 Vol. 30 No. 2, pp. 55–104 ISSN 0165-6147
Pharmacology of curcumin
IL-17 in human disease
Discovering GAPCs
Plasticity of adult hippocampal progenitors
Cell Press

Pharmacological basis for the role of curcumin in chronic diseases: an age-old spice with modern targets.

Aggarwal BB, Sung B.

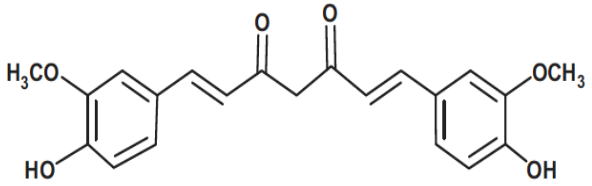
Trends Pharmacological Sciences. 2009 Feb;30(2):85-94.

Vogel (1842):
Isolated curcumin

Milobedzka (1910):
Identified structure of curcumin

Lampe (1913):
Synthesized curcumin

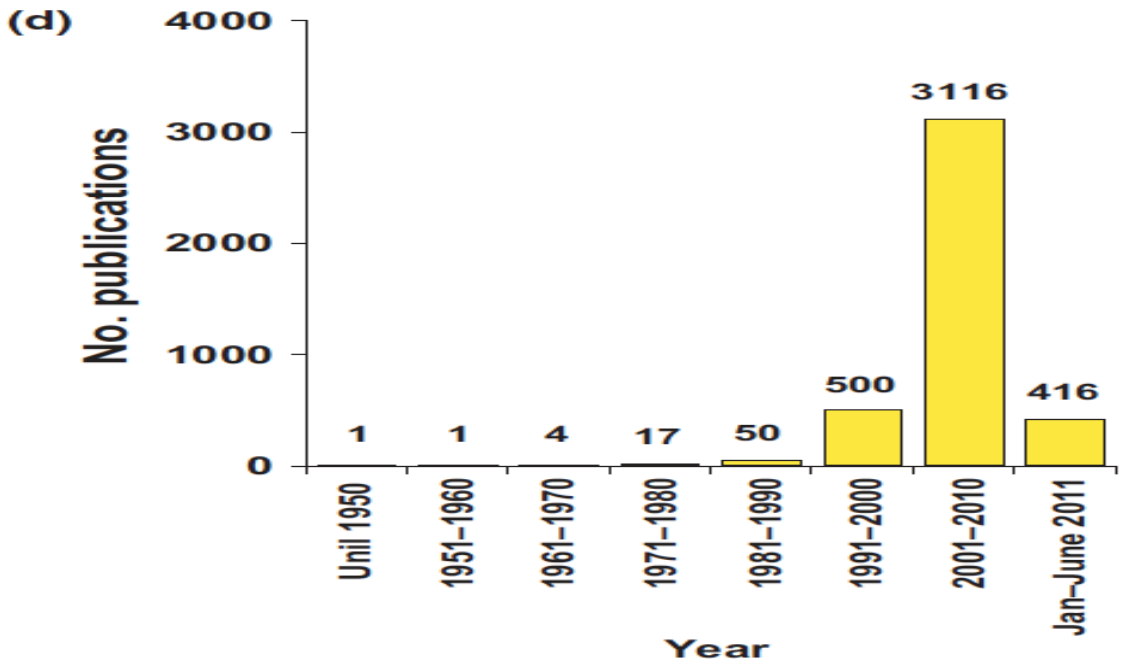
Srinivasan (1953):
Discovered that curcumin is a mixture



Curcumin

(c) **Antibacterial Action of Curcumin and Related Compounds**

INVESTIGATIONS by A. R. Todd[1], H. Rinderknecht[2] W. B. Geiger[3] and others have shown that many unsaturated ketones with the grouping —C=C—CO— also present in a number of naturally occurring antibiotics, possess antibacterial action. In our studies on unsaturated ketones, we found that chalkone flavanone, flavone and some of their derivatives for example, buteine (2,4,3′,4′-tetrahydroxychalkone) a substance of vegetable origin, showed a marked



Discovery of curcumin, a component of golden spice, and its miraculous biological activities.
Gupta SC, Patchva S, Koh W, Aggarwal BB.
Clinical and Experimental Pharmacology and Physiology. 2012 Mar;39(3):283-99.

Antibacterial action of curcumin and related compounds.

SCHRAUFSTATTER E, BERNT H.

Nature.

1949 Sep 10;164(4167):456.

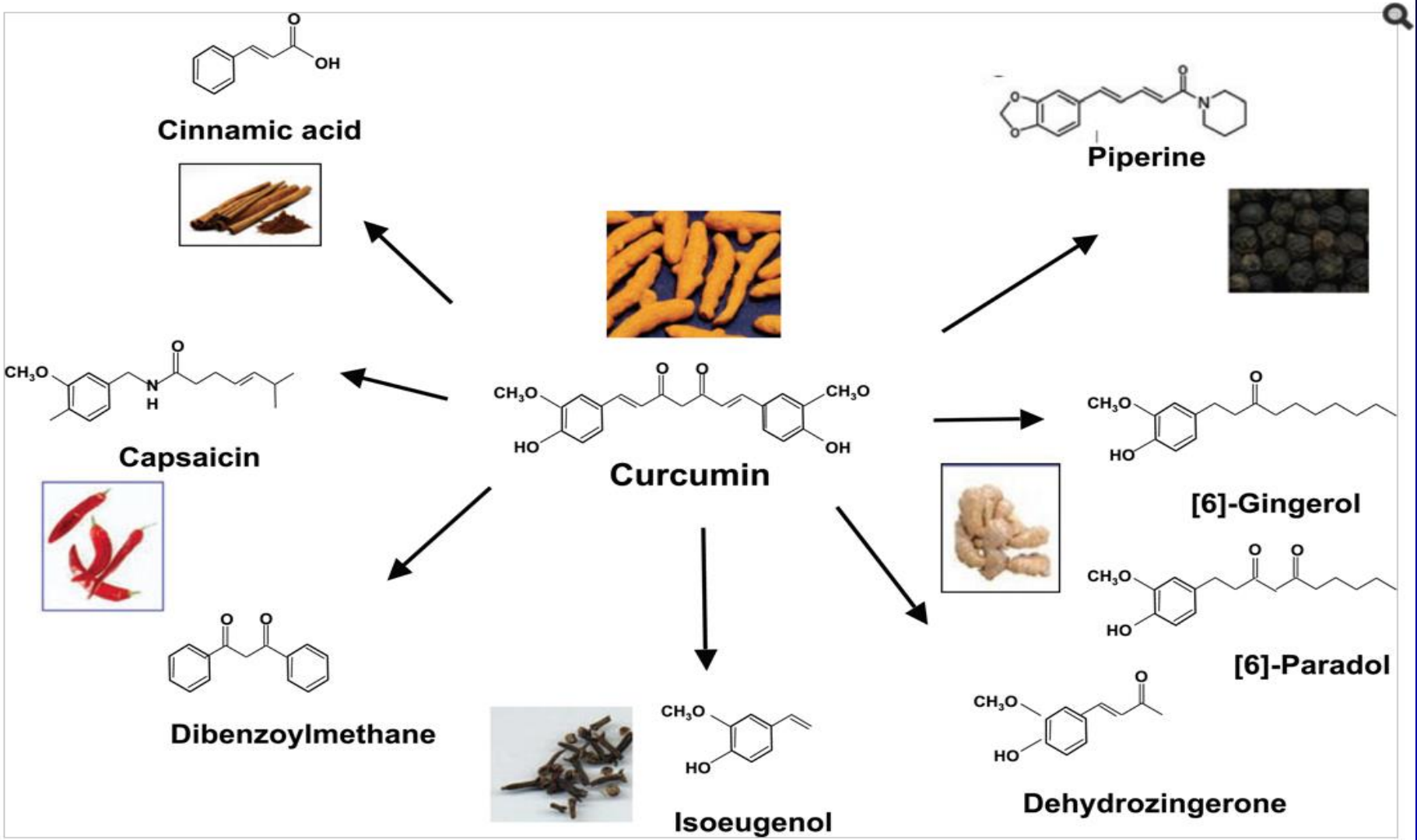
Targeting inflammation-induced obesity and metabolic diseases by curcumin and other nutraceuticals.

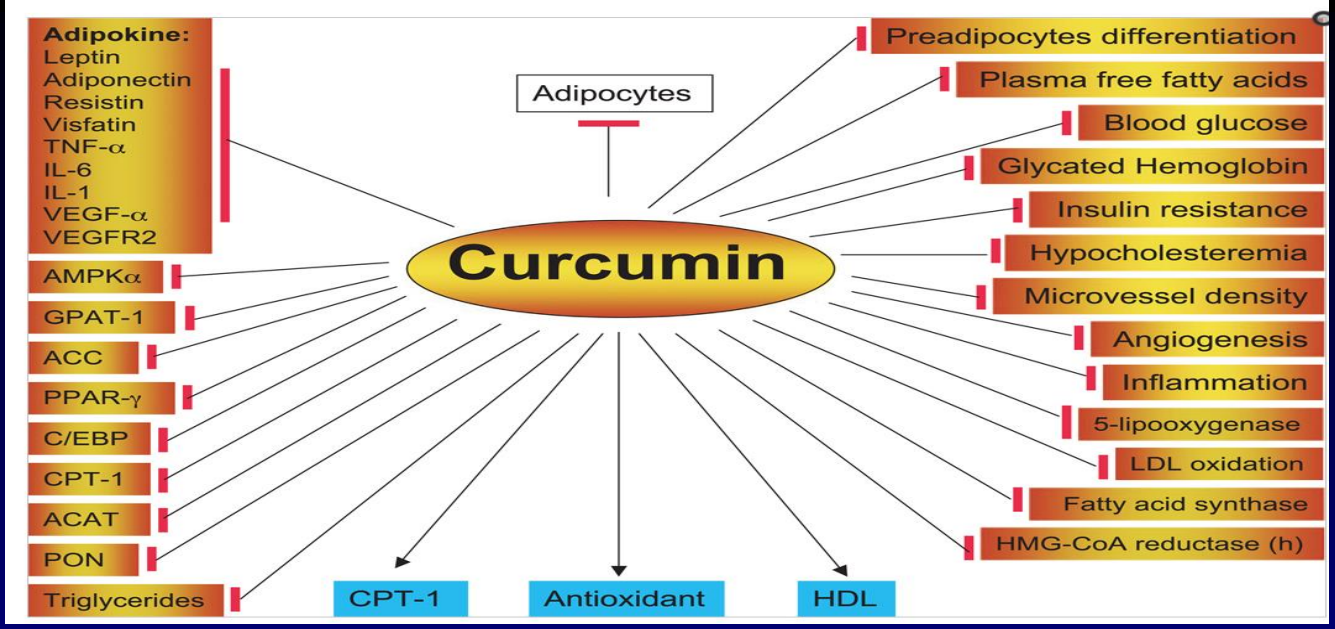
Aggarwal BB.

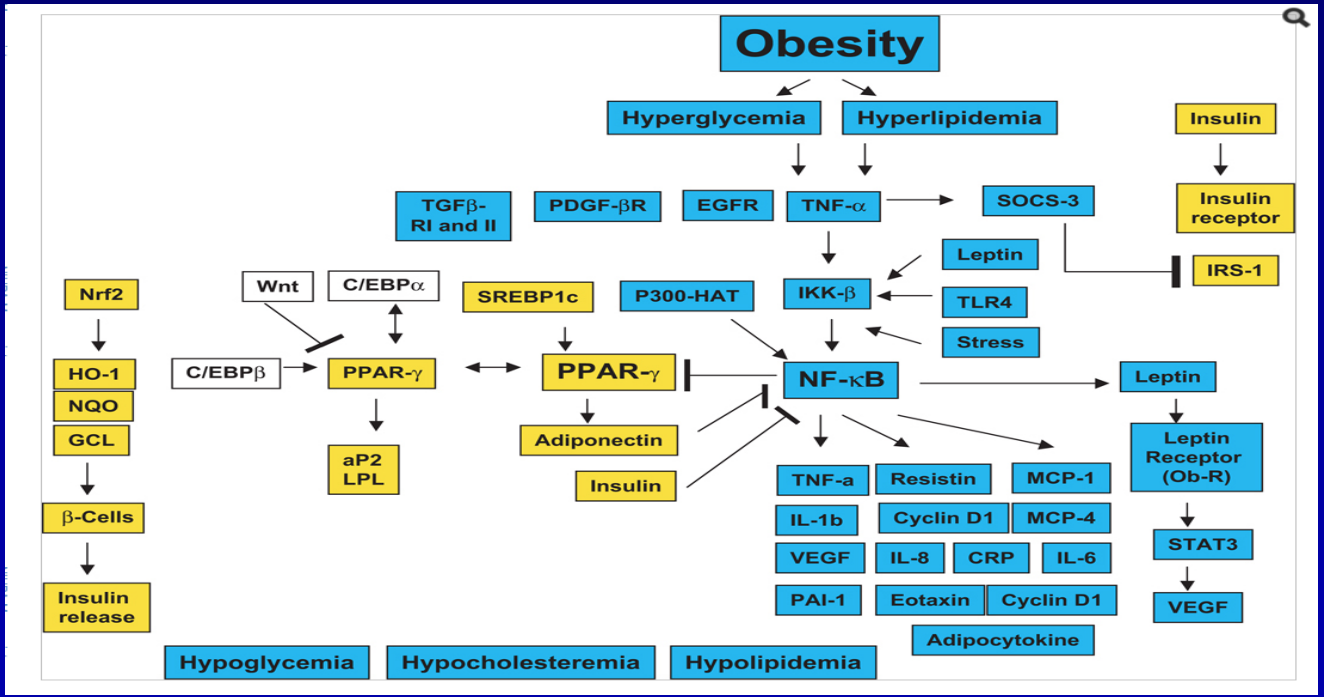
Annual Review Nutrition
2010 Aug 21;30:173-99.

Targeting inflammation-induced obesity and metabolic diseases by curcumin and other nutraceuticals.

Aggarwal BB. Annual Review Nutrition 2010 Aug 21;30:173-99.



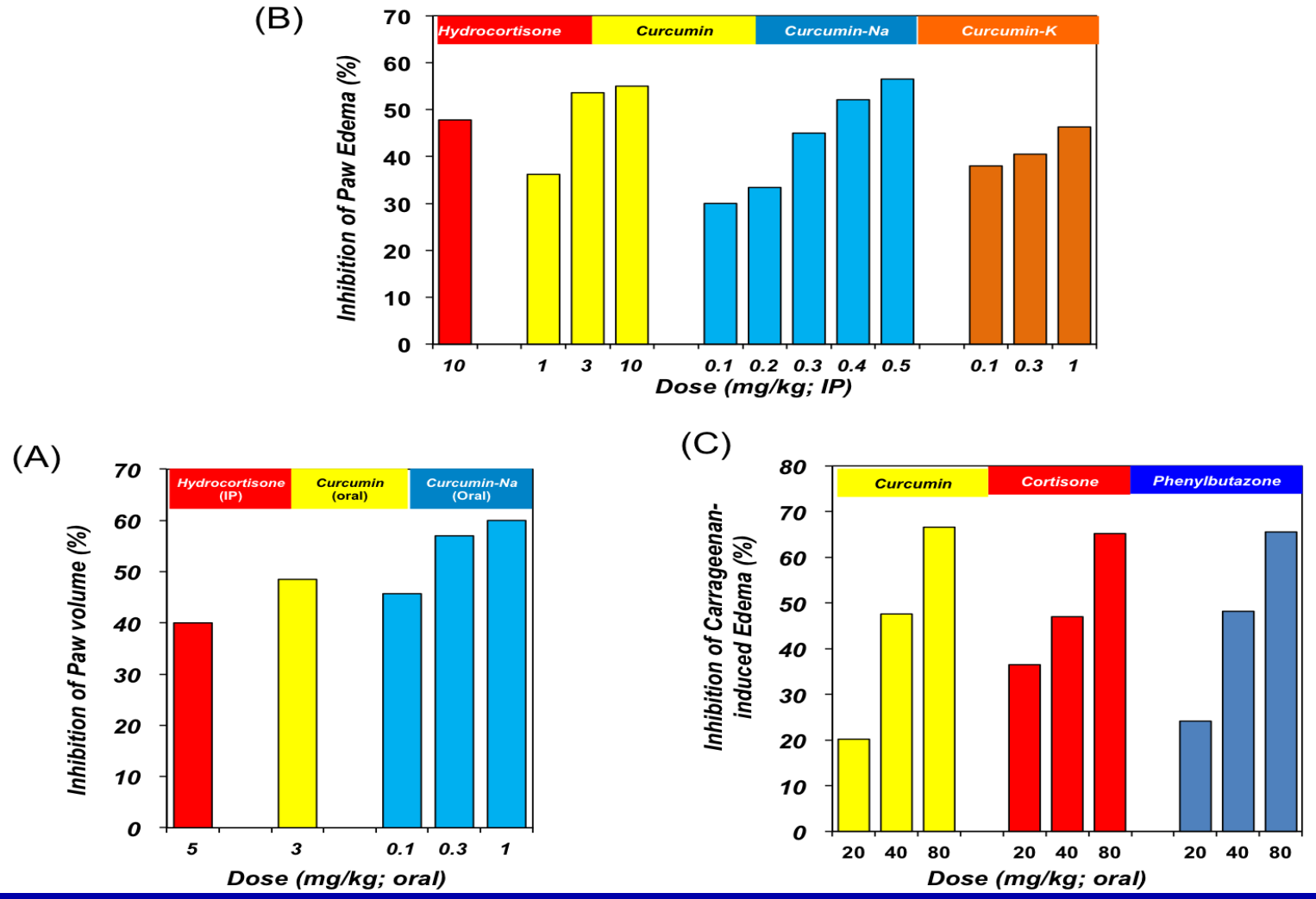




Targeting inflammation-induced obesity and metabolic diseases by curcumin and other nutraceuticals. **Aggarwal BB.**
Annual Review Nutrition 2010 Aug 21;30:173-99.

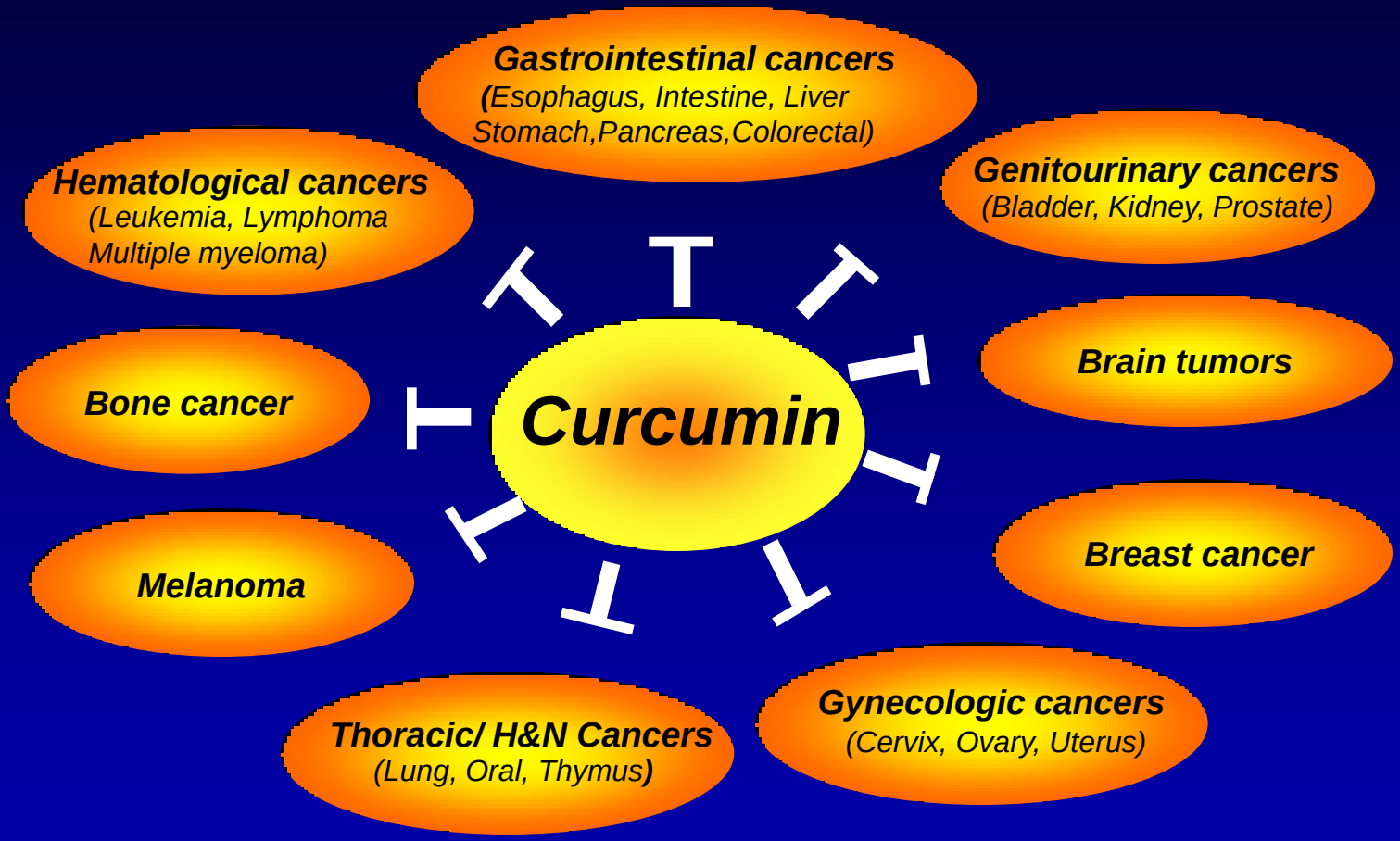
Curcumin is as potent as hydrocortisone and phenylbutazone

Fig. 1



Anti-inflammatory and irritant activities of curcumin analogues in rats. Mukhopadhyay A et al Agents Actions. 1982

Preclinical data with curcumin against various cancers



Curcumin and cancer: an "old-age" disease with an "age-old" solution.

Anand P, Sundaram C, Jhurani S, Kunnumakkara AB, Aggarwal BB. Cancer Lett. 2008;267:133-64.

Tumor Necrosis Factor (TNF) Discovery

Aggarwal etal, Journal of Biological Chemistry (1982)

Pennica, Nature (1984)

Aggarwal, etal, Journal of Biological Chemistry (1985)

Aggarwal, etal, Nature (1984)

Aggarwal, etal, Journal of Biological Chemistry (1985)

Aggarwal, etal, Nature (1985)

Although we discovered TNF as an anticancer agent, soon it became a primary mediator of inflammation!

TNF blockers

- *Infliximab (Remicade)*
- *Adalimumab (Humira)*
- *Certolizumab pegol (Cimzia)*
- *Golimumab (Simponi)*
- *Etanercept (Enbrel).*

FDA Approved use of TNF blockers

Rheumatoid arthritis

Ankylosing spondylitis

Inflammatory bowel disease

Psoriasis

Hidradenitis suppurativa

Refractory asthma

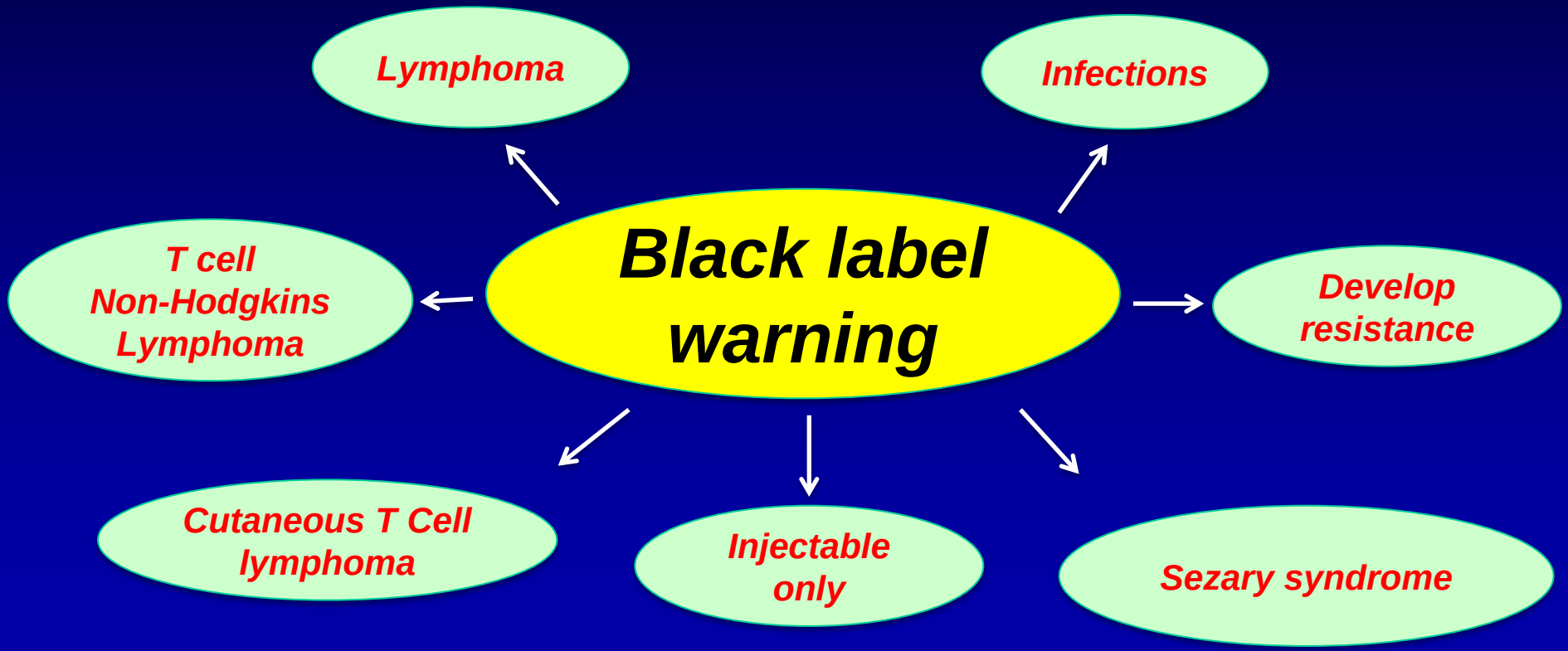
TNF blockade: an inflammatory issue

Aggarwal BB, Shishodia S, Takada Y, Jackson-Bernitsas D, Ahn KS, Sethi G, Ichikawa H.

Ernst Schering Res Found Workshop.

2006;(56):161-86. Review.

FDA Approved TNF Blockers with Black Label Warning



Deepak, 2012; Askling, 2005a, 2005b; Siegel, 2009; Herrinton, 2011; Parakkal, 2011; Adams, 2004; Dalle, 2005; Michot, 2009; Dauendorffer, 2007; Lourari, 2009; Schmidt, 2009; Mackey, 2007

Side Effects of TNF blockers

- *Lymphomas,*
- *Infections*
- *(especially reactivation of latent tuberculosis),*
- *Congestive heart failure,*
- *Demyelinating disease,*
- *Lupus-like syndrome,*
- *Induction of auto-antibodies,*
- *Injection site reactions,*
- *Systemic side effect*

Market for TNF blockers $33 Billion/yr:

Adalimumab (Humira)..$11 billions

Etanercept (Enbrel)..$9 billions

Infliximab (Remicade)..$10 billions

Certolizumab pegol (Cimzia)..$2 billions

Golimumab (Simponi)..$1 billion

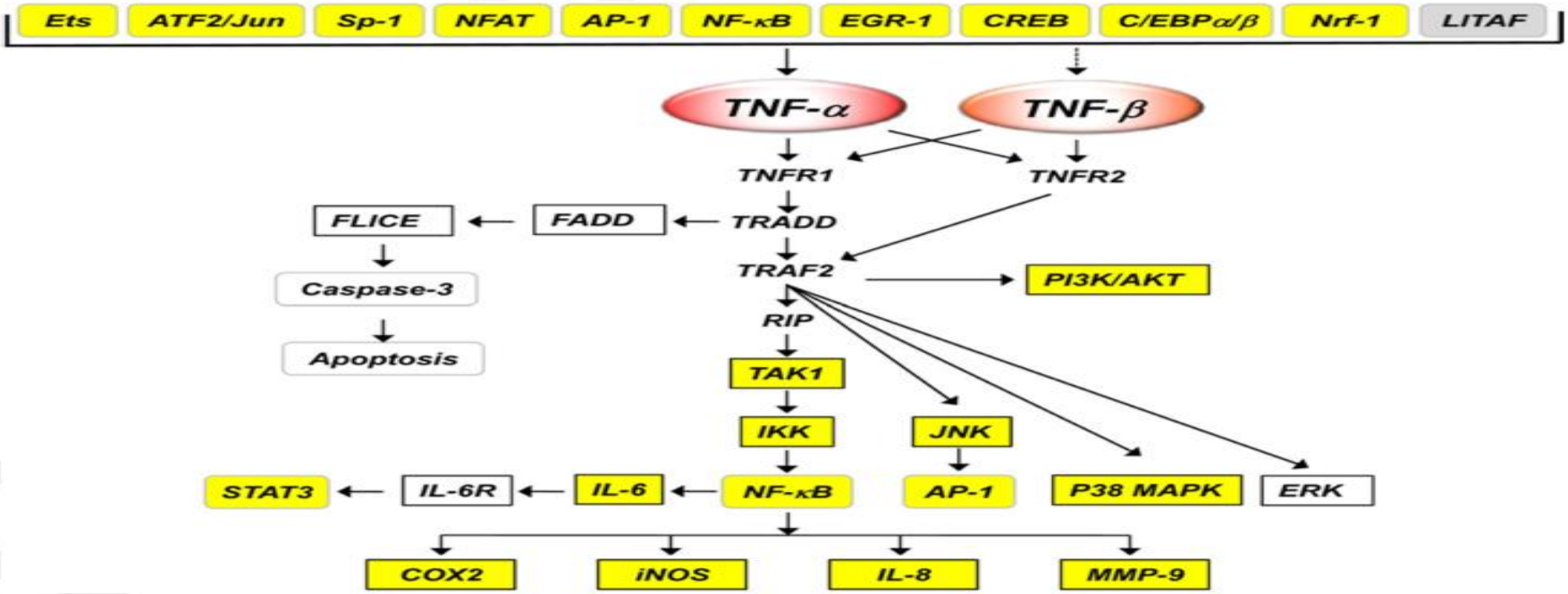
BJP British Journal of Pharmacology

REVIEW

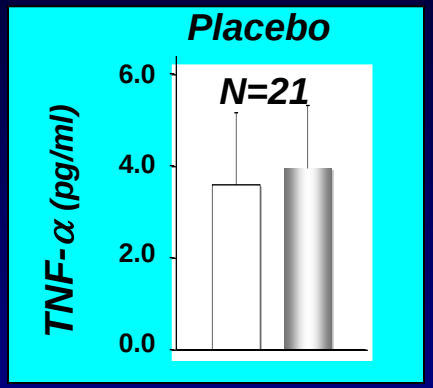
Curcumin: an orally bioavailable blocker of TNF and other pro-inflammatory biomarkers

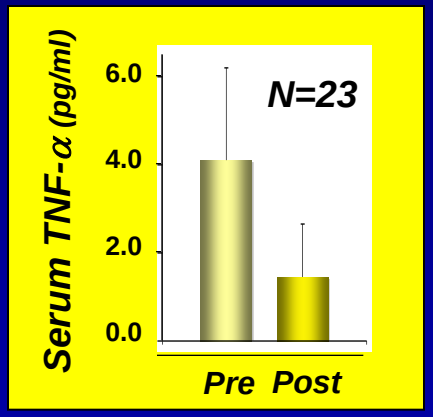
Bharat B Aggarwal, Subash C Gupta and Bokyung Sung

Cytokine Research Laboratory, Department of Experimental Therapeutics, The University of Texas MD Anderson Cancer Center, Houston, TX, USA



Evidence that curcumin is an orally bioavailable TNF-a blocker in human





Curcumin
(150 mgx2 daily)

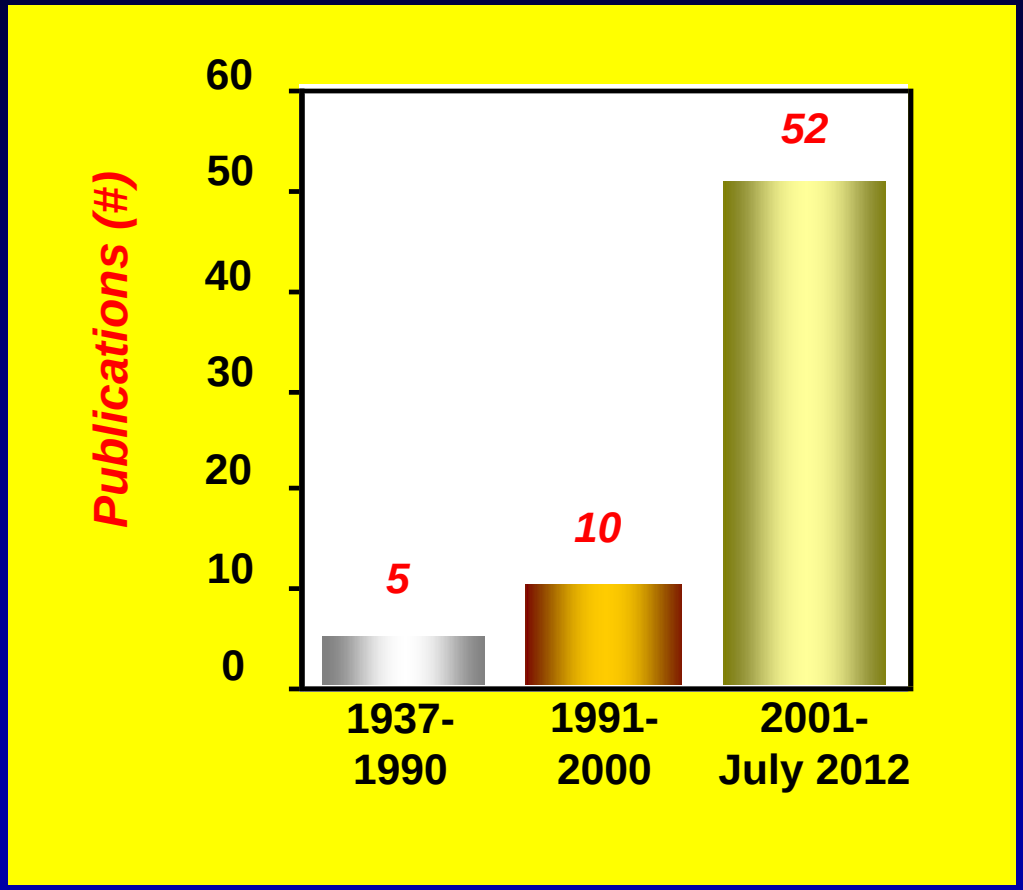
8 wks

Usharani, 2008

To date, more than 65 human clinical trials of curcumin, which included more than 1000 patients, have been completed, and as many as 35 clinical trials are underway!

Therapeutic Role of Curcumin:

Lessons Learned from Clinical trials



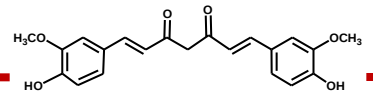
Gupta, Patchva and Aggarwal:

AAPS J. (in press)

Curcumin Clinical Trials?

Cancer
- Colorectal cancer
- Pancreatic cancer
- Breast cancer
- Prostate cancer
- Multiple myeloma
- Lung cancer
- Cancer lesions
- Head and neck cancer

Inflammatory diseases
- Crohn disease
- Ulcerative proctitis
- Ulcerative colitis
- Inflammatory bowel disease
- Irritable bowel syndrome
- Rheumatoid arthritis
- Osteoarthritis
- Chronic anterior uveitis
- Recurrent anterior uveitis
- Post operative Inflammation
- Gastric ulcer
- Peptic ulcer
- H. pylori infection
- Idiopathic orbital inflammatory Pseudotumor



Curcumin

Skin diseases
- Vitiligo
- Psoriasis

Neurodegenerative diseases
- Dejerine-Sottas disease
- Alzheimer's disease

Cardiovascular diseases
- Acute coronary syndrome
- Atherosclerosis

Metabolic diseases
- Diabetes
- Diabetic nephropathy
- Diabetic microangiopathy
- Lupus nephritis

Renal diseases
- Renal transplantation

Viral diseases
- Acquired immunodeficiency syndrome

OTHERS
- β-Thalassemia
- Biliary dyskinesia
- Gallbladder contraction
- Recurrent respiratory tract infections
- Cholecystitis
- Hepatoprotection
- Chronic arsenic exposure
- Alcohol intoxication
- Chronic bacterial prostatitis

Gupta, Patchva and Aggarwal:, AAPS J. (in press)

Curcumin Clinical Trials (120)

- Panahi, 2015
- Panahi, 2014
- Lopresti, 2014
- Nakayama, 2014
- Henrotin, 2014
- Panahi, 2014
- Ganjali, 2014
- Abidi, 2014
- Kuptniratsaikul, 2014
- Soare, 2014

- Panahi, 2014
- Klickovic, 2014
- Takahashi, 2014
- Jager, 2014
- Singla, 2014
- Sanmukhani, 2014
- Belcaro, 2014
- Cheungsamarn, 2014
- Basu, 2013
- Hejazi, 2013

- Morimoto, 2013
- Marciani, 2013
- Moreillon, 2013
- Ryan, 2013
- Elad, 2013

- Bergman, 2013
- ~~Peek, 2013~~
- Kanai, 2013
- Muglikar, 2013
- Mohammadi, 2013

- Suskind, 2013
- Sahebkar, 2013
- Na, 2013
- Vaolak, 2013
- Irving, 2013
- Ledda, 2012
- Steigerwalt, 2012
- Akazawa, 2012
- Panahi, 2012
- Kudva, 2012

- DiSilvestro, 2012
- Cheungsamarn, 2012
- He, 2012
- Wongharoen, 2012
- Golombick, 2012
- Sugawara, 2012
- Chandran, 2012
- Vitaglione, 2012
- Chainani-Wu, 2012
- Kusuhara, 2012

- Araujo, 2012
- Pinsornsak, 2012
- Wolff, 2012
- Panahi, 2012
- Chainani-Wu, 2012
- Khajehdehi, 2012
- Kanai, 2012
- Appendino, 2011
- Mishra, 2011
- Pungcharoenkul, 2011

- Agarwal, 2011
- Khajehdehi, 2011
- Sasaki, 2011
- Cuomo, 2011
- Carroll, 2011
- Aggarwal, 2011
- Kanai, 2011
- He, 2011
- Belcaro, 2010
- Asawanonda, 2010

- Ide, 2010
- Sannia, 2010
- Koosirirat, 2010
- Dominiak, 2010

- Biswas, 2010
- Bayet-Robert, 2010
- Kalpravidh, 2010
- Burns, 2009
- Golonbick, 2009
- Masouni, 2009

- Cai, 2009
- Shimouchi, 2009
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- Adhvaryu, 2008
- Dhillon, 2008
- Usharani, 2008
- Vareed, 2008
- Kurd, 2008
- Baum, 2007
- Chainani-Wu, 2007

- Di Mario, 2007
- Marczylo, 2007
- Everett, 2007
- Juan, 2007
- Tuntipopipat, 2006
- Hanai, 2006
- Cruz-Correa, 2006
- Loa, 2006
- Durgaprasad, 2005

- Shoskes, 2005

- Holt, 2005
- Ringman, 2005
- Garcea, 2005
- Sharma, 2004
- Bao, 2003
- Rasyid, 2002
- Plummer, 2001
- Cheng, 2001
- Sharma, 2001
- Heng, 2000

- Ramirez Bosca, 2000
- Niederau, 1999
- Lal, 1999
- Rasyid, 1999
- Shoba, 1998
- James, 1996
- Satoskar, 1986
- Deodhar, 1980
- Pilz, 1975

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Shortt T.. Madras quart. J. med. Sci. 1867; 12: 170.
Guttenberg A.. Z. ges. exp. Med. 1927; 54: 542.
Koch R.. Münch. med. Wschr. 1927; 74: 972.
Kalk H., Nissen K.. Dtsch. med. Wschr. 1931; 62: 1613.
Fähndrich H.A.. Fortschr. Ther. 1932; 8: 606.
Franquelo E.. Münch. med. Wschr. 1933; 80: 524.
Henning N., Künzel O.. Münch. med. Wschr. 1934; 81: 1611.
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von den Velden R.. Fortschr. Ther. 1934; 10: 725.
Helmy W.. Med. Welt 1935; 9: 90.
Stefan, R. (1934) Quoted by Vetterlein.
Vetterlein S.. Dtsch. med. Wschr. 1935; 61: 964.

TURMERIC (CURCUMIN) IN BILIARY DISEASES

Albert Oppenheimer M.D.

(ASSISTANT PROFESSOR OF ROENTGENOLOGY TO THE AMERICAN UNIVERSITY OF BEIRÛT, LEBANON)

The Lancet, Volume 229,

Issue 5924, Pages 619 - 621, 13 March 1937

Phase II trial of curcumin in patients with advanced pancreatic cancer.

Dhillon N, Aggarwal BB, Newman RA, Wolff RA, Kunnumakkara AB, Abbruzzese JL, Ng CS, Badmaev V, Kurzrock R.

Clin Cancer Res.

2008 Jul 15;14(14):4491-9.

A Gift of Time

"If you want to do something, do it now. Don't wait."

This advice comes from a patient with end-stage pancreatic cancer who was given an unexpected gift of time, thanks to curcumin, the main ingredient in the spice turmeric. When Duane Jacobson first came to the Clinical Center for Targeted Therapy (CCTT) at M. D. Anderson, he had less than three months to live, estimated his oncologist Razelle Kurzrock, M.D., principal investigator of the curcumin trial and also chair of the Department of Investigational Cancer Therapeutics (Phase I Clinical Trials Program). More than two years later, he is traveling around the world with his wife Hildrud while enrolled in an NIH-sponsored, phase II clinical trial of curcumin in advanced pancreatic cancer.

A Gift of Time

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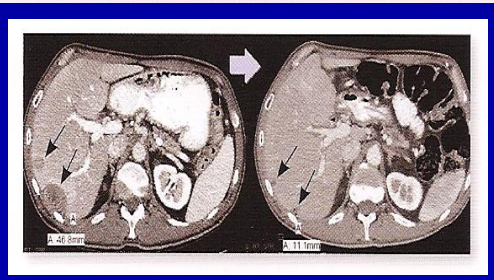
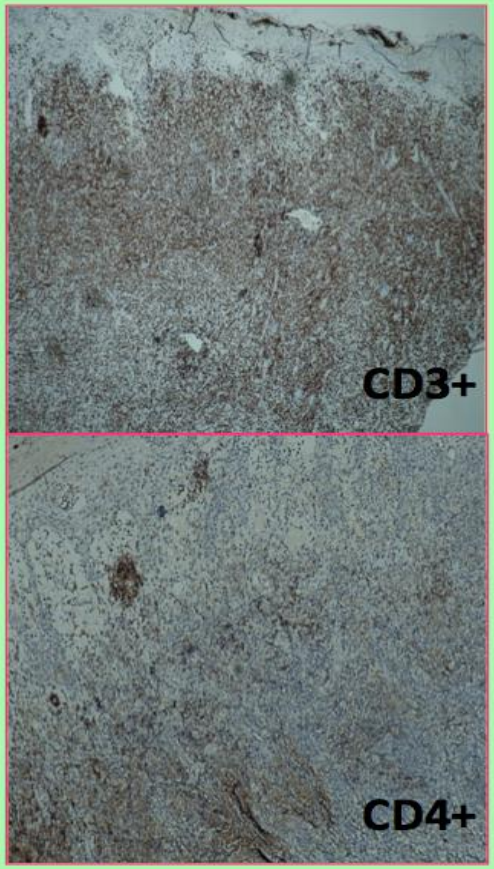
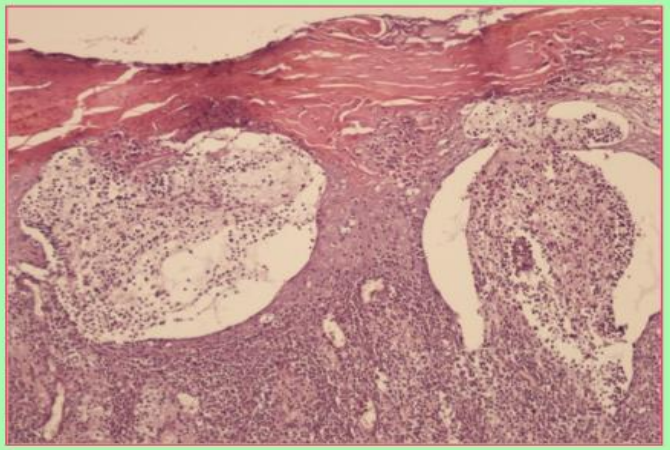




Curcumin as local application on the lesion of a Bulgarian tumor stage CTCL patient



Prof. S. Konstantinov, MD PhD; Medical University, Faculty of Pharmacy
Dept. of Pharmacology, Pharmacotherapy and Toxicology; Lab for Experimental Chemotherapy; 2 Dunav Str, 1000 Sofia, Bulgaria; Spiro Mihaylov Konstantinov konstantinov.spiromihaylov@gmail.com

Curcumin & Psoriasis Clinical Trials

Treatment of psoriasis with Psoria-Gold

MCY Heng, MK Song, J. Harker and MK Heng, Br. J. Dermatology, 143, 2000, 937-949

Courtesy of Dr. Madeline Heng from UCLA
http://www.psoria-gold.com/RESEARCH.html

Spicy approach to cancer treatment.

Nath S.

Journal of National Cancer Institute
2011 Dec 21;103(24):1817-8.

Curry compound fights cancer in the clinic

Carter A.

Journal of National Cancer Institute
2008 May 7;100(9):616-7.

SCIENTIFIC AMERICAN™

Spice Healer [Preview]

An ingredient in curry shows promise for treating Alzheimer's, cancer and other diseases

By Gary Stix

Searching for new drugs by milling through ancient folk pharmacopoeia or by just picking a plant while walking in the woods has a decidedly checkered history. Many well-established therapeutic compounds originated in trees, shrubs, mollusks, even dirt. Aspirin came from willow bark, cholesterol-lowering statins from a mold, and the antimalarial artemisinin from a shrub used in traditional Chinese medicine.

Is it a coincidence or luck?

Selected Lectures and Interview on Weblinks

http://www.youtube.com/watch?v=Zht2Q5D0RdY

http://www.youtube.com/watch?v=XT7vXV7MCmE

www.survivingterminalcancer.com

https://www.youtube.com/watch?v=OI5Z6tA4o1Q…….French

http://www.youtube.com/watch?v=Bnnm15CHRi8

https://www.youtube.com/watch?v=lHNHHJxPLXg

http://www.curcumacurcumine.com/recherches-bharat-aggarwal-curcumine/

http://www.healthyindiandiet.com/blog/interview-with-dr-bharat-aggarwal-pioneer-of-turmeric-research

http://margaret.healthblogs.org/2011/01/25/a-spicy-interview-with-prof-bharat-aggarwal/

http://www.thehealthcaresurvivor.com/an-interview-with-professor-bharat-aggarwal-renowned-curcumin-researcher/

http://naturalmedicinejournal.com/journal/2009-12/pioneering-biochemist-bharat-b-aggarwal-phd-md-anderson-cancer-center-discovering

http://onlinelibrary.wiley.com/doi/10.1111/eci.12171/abstract;jsessionid=6DBDDC04ADBFD3BDEF7DABC238D3B807.f03t04

http://www.chron.com/news/houston-texas/article/In-cancer-fight-a-spice-brings-hope-to-the-table-1913487.php

http://www.medicine.mcgill.ca/oncology/VSPO/Aggarwal-BIO.pdf

http://archives2013.gcnlive.com/Archives2013/aug13/PowerHour/0819133.mp3

http://timesofindia.indiatimes.com/city/pune/Expert-backs-three-spices-in-diet-to-keep-cancer-away/articleshow/50780645.cms

KTRK Curry to Prevent Cancer.mpg.

https://www.dropbox.com/s/8duxs2r8e1w6qwo/KTRK%20-%20Curry%20to%20Prevent%20Cancer.mpg

http://timesofindia.indiatimes.com/city/pune/Expert-backs-three-spices-in-diet-to-keep-cancer-away/articleshow/50780645.cms

http://epaperbeta.timesofindia.com/Article.aspx?eid=31814&articlexml=Expert-backs-three-spices-in-diet-to-keep-30012016002039#

http://www.amazon.in/gp/product/1402776632?keywords=Bharat%20aggarwal&qid=1455081285&ref_=sr_1_7&s=books&sr=1-7

http://www.nirmauni.ac.in/ipnu/Events/358

http://www.healthyindiandiet.com/blog/interview-with-dr-bharat-aggarwal-pioneer-of-turmeric-research

http://www.naturalmedicinejournal.com/journal/2009-12/pioneering-biochemist-bharat-b-aggarwal-phd-md-anderson-cancer-center-discovering

https://www.lifepositive.com/turmeric-the-cancer-warrior/

https://www.lifepositive.com/the-immunity-sphere/

Time Magazine

TIME | Health

Illustration by Peter Oumanski for TIME

DIET/NUTRITION

You Asked: Should I Take Turmeric Supplements?

Markham Heid
Aug 05, 2015

TIME Health *For more, visit TIME Health.*

From teas and juices to capsule supplements, turmeric is popping up everywhere these days. And for good reason: Curcumin—a molecule found in turmeric that gives the root its distinctive orangey-yellow hue—appears to be a potent inflammation blocker.

That's big, because inflammation causes or contributes to almost every major disease, including cancer, cardiovascular disease, diabetes and depression, says Dr. Bharat Aggarwal, professor of medicine at the MD Anderson Cancer Center at the University of Texas. "Wherever inflammation is a problem, curcumin may be helpful," Aggarwal says.

McCormick Science Institute

Excellence in Research Award-2008

McCormick Science Institute

Excellence in Research Award-2008

American Society of Nutrition McCormick Science Institute

Excellence in Research Award-2008

2008: Bharat Aggarwal, Ph.D

Ransom Horne Jr. Endowed Professorship in Cancer Research and Chief of the Cytokine Research Section at the University of Texas M. D. Anderson Cancer in Houston

Dr. Aggarwal is the first recipient of the ASN MSI Research Award. Prior to accepting his current position, Dr. Aggarwal was employed by Genentech Inc., where he discovered TNF-alpha and TNF-beta, essential components of the immune system. The focus of his research is to identify dietary components that suppress inflammation and critical pathways in cancer initiation and progression, including cellular proliferation, apoptosis, invasion and angiogenesis. His group has shown that herbs and spices such as turmeric, red chili, cloves, fennel, ginger, black pepper, basil, and fenugreek have a potential in prevention and treatment of cancer through suppression of inflammatory pathways. His work has been disseminated in nearly 450 peer-reviewed articles and invited reviews published in high impact journals and he has been granted almost 35 patents. Dr. Aggarwal has been listed as one of the "World's Most Highly Cited Immunologists" by the Institute of Scientific Information. He is also a member of the McCormick Science Institute Advisory Board.

Add

spice to

your life!

Merci!

Thank you,

Gracias!

Namaste!

Arigato!

Teşekkür ederim!

Obrigado!

Gamsa hamnida!

Kiitos!

Shalom!

Shei-shei!

Do Jeh!

Danke!